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THE
JOURNAL
OF THE
ROYAL HORTICULTURAL SOCIETY
OF LONDON.

NEW SERIES.

VOLUME IV.

EDITED BY

THE REV. M. J. BERKELEY, M.A., F.L.S., F.R.H.S.

AND

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1873.



EXTRACTS FROM THE PROCEEDINGS

OF THE

ROYAL HORTICULTURAL SOCIETY

OF LONDON.

JANUARY 17, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Messrs. E. G. Henderson for *Primula sinensis* (*filicifolia*), Emperor (rosy crimson), Princess of Wales (pure white), Exquisite (delicate pink), and Magenta King; and to Mr. Denning, gardener to Lord Londesborough, for *Odontoglossum Denisonæ*, probably a white variety of *O. luteo-purpureum*. Cultural Commendations were given to Mr. Denning for *Phalænopsis Porteana*; to Messrs. Veitch for forced examples of Persian and Charles X. Lilacs; to Mr. Turner for hybrid Aucubas and Tricolor Pelargonias; to Mr. B. S. Williams for *Cattleya Walkeriana*; to Messrs. Backhouse for *Lælia autumnalis grandiflora*; and to Mr. Wiggins for Cyclamens. An Extra Prize was given to Messrs. Standish for Bouvardias. Messrs. Lane were first for Ivies, Mr. Turner second; Messrs. Standish first for Conifers, Messrs. Veitch second, Messrs. Lane third.

FRUIT COMMITTEE.

Cultural Commendations were given to Mr. Wilson, gardener to Earl Fortescue, for two Charlotte Rothschild Pines, weighing $13\frac{1}{2}$ lbs., cut from plants 17 months old; and to Mr. Bray, gardener to W. A. Sandford, Esq., for forced Asparagus. Messrs. Backhouse sent the Galloway Pippin, to which a First-class Certificate was awarded last year, which fully maintains its character. Mr. Parsons, gardener to R. Attenborough, Esq., was first for Apples, Mr. Miles, gardener to Lord Carrington, second. Mr. Miles was first for Kitchen Pears with unusually well-coloured Catillac.

SCIENTIFIC COMMITTEE.

Dr. MASTERS, F.R.S., in the Chair.

The Secretary brought a false cone of the common Spruce produced by the aphid *Chemes abietis*; it was interesting from being confined to one side of the shoot.

Mr. Marshall sent a Chinese Primrose with green leafy flowers, upon which Dr. Masters was requested to report.

GENERAL MEETING.

Lord H. GORDON LENNOX, M.P., in the Chair.

The proceedings were merely formal.

FEBRUARY 14, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Messrs. Veitch for *Kentia australis* and *K. Canterburiana* from Lord Howe's Island; to Mr. B. S. Williams for *Davallia Tyermannii*; to Mr. C. Noble for

Thujopsis borealis (aurea variegata); to Mr. Green for *Rhipidodendron plicatile (majus)*; and to Mr. Croucher for *Agave Morgani* and *A. Gibbsii*. A Second-class Certificate was awarded to Mr. Bull for *Odontoglossum odoratum*. Cultural Commendations were given to Messrs. Veitch for *Hippeastrum pardinum* and a fine group of Orchids; to Mr. Speed, gardener to the Duke of Devonshire, for cut flowers of *Amherstia nobilis*; to Mr. B. S. Williams for Orchids, hybrid Solanums, and *Tillandsia Lindenii*; to Messrs. Rollisson for a group of Orchids; to Mr. Howard, gardener to J. Brand, Esq., for Orchids and two baskets of Lily of the Valley; to Mr. Denning for Orchids; to Mr. Wiggins for Cyclamens; to Mr. B. Johnson, gardener to T. T. Clarke, Esq., for *Daphne indica (rubra)*; to Mr. J. Tompkins for *Primula* (Princess Louise); to Mr. Richards, gardener to Baron Rothschild, for a variety of *Odontoglossum Alexandræ*; to Mr. Wilson, gardener to W. Marshall, Esq., for *Masdevallia ignea*; to Mr. Lawrence, gardener to Bishop Sumner, for *Dendrochilum glumaceum*; to Mr. W. Paul for cut Camellias; to Mr. Ware for succulent plants and spring flowers; and to Messrs. Standish for spring forced plants. Mr. J. George, gardener to Messrs. Nicholson, took the First Prize for Dielytras, Mr. Denning being second. Mr. Denning was first for Lyncastes. Mr. Goddard, gardener to H. Little, Esq., was first for Chinese Primulas, Messrs. Dobson receiving an Extra Prize. Mr. J. Scott, gardener to J. B. Howitt, Esq., took the Prize offered by Mr. W. Paul for Waltham White Primula.

FRUIT COMMITTEE.

A Cultural Commendation to Mr. Melville, Jersey, for prolific variegated ornamental Greens. Mr. Miles took the First Prize for Apples, Mr. Parsons second. For Pears Mr. J. Stephenson, gardener to F. C. Barker, Esq., was first, Mr. Dixon, gardener to Lady Holland, second. Mr. Gilbert sent a new form of Grape Exhibition Case, which was recommended to be sent to Chiswick for trial.

SCIENTIFIC COMMITTEE.

ANDREW MURRAY, Esq., F.L.S., in the Chair.

Mr. Webb, of Reigate, sent a *Cyclamen* which had thrown up a stem bearing leaves and axillary flowers; he had six or eight other plants in the same condition. The stem was round in its lower part, but somewhat aborted in the upper, with a petiole and peduncle partly adnate to it, giving the whole a slightly fasciated appearance.

Major Clarke said that he had heard from the late Donald Beaton that cuttings from these stems, which occasionally occurred, afforded a means of propagating *Cyclamens*.

Dr. Welwitsch had several times met with wild plants of *Cyclamen* in Carinthia producing similar branches.

The grub of a small Moth, probably *Thecla Isocratis*, was shown feeding on the fruit of the Pomegranate.

Prof. Thiselton Dyer had seen specimens of *Polyporus squamosus* from Hampstead, riddled in every direction by the larvæ of a small Moth.

Dr. Welwitsch stated that, from a communication from Count Salms, he learnt that there was now evidence in the Berlin Museum that the parasite producing the deformity exhibited at the Committee on Nov. 1., and of which a similar instance was figured in the "Gardener's Chronicle," 1871, p. 1425, was a true *Loranthus*, as leaves still remained on the specimen.

GENERAL MEETING.

JAMES BATEMAN, Esq., F.R.S., in the Chair.

Professor Thiselton Dyer commented on the plants examined by the Floral Committee, and especially on *Amherstia nobilis*, which was originally introduced by Mr. Gibson. Mr. Bateman stated that at Penllagere, near Swansea, Mr. Dillwyn had a plant of Evergreen Beech (*Fagus betuloides*), near the tide line, which was 15 feet high, with a girth of 11 inches at 3 feet from the ground, when last measured, near which *Arundinaria falcata* has attained a height of

15 feet.* Mr. Bateman then commented on the Orchids exhibited, and especially on *Odontoglossum Alexandræ* as an object of ornament.

The Meeting then adjourned.

MARCH 6, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Mr. B. S. Williams for *Toxicophlæa spectabilis*; to Mr. Green for *Imantophyllum miniatum* (*Cooperi*), believed to be identical with *I. miniatum* (*pictum*), shown formerly by Mr. Bull, and the same as *grandiflorum* of the nurseries; to Messrs. Rollisson for *Calamus verticillaris*; to Mr. W. Paul for Waltham White Primula. Cultural Commendations were awarded to Mr. Masson, gardener to R. Miln, Esq., for *Phalenopsis Schilleriana* with 207 fully-expanded blossoms, to which a Silver Floral Medal was awarded; to Mr. Denning for a group of Orchids; to Messrs. Veitch for *Dendrobium Farmeri*, for Palms and Roses in Pots; to Mr. B. S. Williams for *Dendrobium Cambridgeanum*, Cyclamens, &c.; to Mr. Ware for hardy spring flowers; to Messrs. Rollisson for Palms and Orchids; to Mr. Herbst for two baskets of Lily of the Valley; to Messrs. Henderson for Cyclamens; to Messrs. Standish for forced spring flowers, with a grand box of Maréchal Niel Rose; and to Mr. W. Paul for cut Camellias. Mr. Potts, gardener to J. Knowles, Esq., took the First Prize for cut blooms of Camellias.

FRUIT COMMITTEE.

Cultural Commendations were given to Mr. Miles for smooth Cayenne Pines, weighing $6\frac{1}{2}$ and 5 lbs., from plants thirteen months old; to Sir. W. C. Trevelyan for home-grown Oranges and Lemons; and to Mr. Sage, gardener to Earl Brownlow, for Keen's Seedling Strawberries. Mr. J. Potts, gardener to J. Knowles, Esq., was first for late Grapes, Mr. Sage second, Mr. Bannerman, gardener to

* There is an illustration of the tree in the "Gardener's Chronicle," 1872, p. 467.

Lord Bagot, third. Mr. Miles was first for Asparagus, Seakale, and Rhubarb, Mr. Bray second, and Mr. Gilbert third. Mr. E. Benary sent a small variety of Indian Corn, the cobs being from 3 to 4 inches long.

SCIENTIFIC COMMITTEE.

ANDREW MURRAY, Esq., F.L.S., in the Chair.

The Secretary brought a branch of a Portugal Laurel in which the leaves were a good deal bleached, while others had only the perforations which are commonly the consequence of frost. The tree had been unhealthy ever since the winter of 1866, and its condition was apparently attributable to that severe season.

He also brought a branch of an Apple-tree in which canker had arisen from the development of adventitious roots.

A letter was read from Mr. Thwaites respecting the disease which has affected the Coffee plantations in Ceylon, which is due to a very curious Fungus (*Hemileia vastatrix*) intermediate between *Uredinei* and *Mucedines*. It attacks the leaves, and causes them to fall prematurely.

A discussion then took place respecting the "Australian Caoutchouc," which has been found on the surface of sandy grounds near Adelaide. It is believed to have been derived from petroleum springs. It is remarkable that it contains traces of the necklace-like bodies which are characteristic of the genus *Collema* and also *Cymbellæ*. (See for a detailed account Journ. of Bot. 1872, pp. 103—106, and 338.)

Prof. Thiselton Dyer exhibited a solution of æsculetin which is remarkably fluorescent.

He also read an abstract of a paper by C. J. Maximowicz on the "Influence of Foreign Pollen on the Form of the Fruit produced." (See Journ. R. Hort. Soc. n.s. iii., pp. 161—168.)

GENERAL MEETING.

LORD H. GORDON LENNOX, M.P., in the Chair.

Mr. Berkeley stated that the Toxicophlæa, which was so much admired by the Floral Committee, belongs to the same natural

order as the common Periwinkle, and that the bark is used by the Hottentots as an ordeal. Whatever may be thought of the *Imantophyllum*, it is certainly an improvement on the common form. Mr. Wilson Saunders had also sent flowers of the ornamental Composite *Stiffia chrysanth.*. Horticulturists are much indebted to Messrs. Backhouse and Mr. Ware for calling attention to hardy spring flowers. Mr. Berkeley stated that plants of Brocoli lifted to protect them from the frost had in many cases rotted off from the middle of the stem. Mr. Bateman commented on the Orchids.

MARCH 20, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Mr. Jaques, gardener to P. Cunliffe, Esq., for *Odontoglossum Alexandræ* (roseum); to Messrs. Veitch for *O. Andersonianum*, possibly a hybrid between *O. Alexandræ* and *O. gloriosum*; and to Mr. B. S. Williams for *Agave geminata** (*Williamsii*). A Cultural Commendation was given to Mr. Chambers, gardener to J. Lawrence, Esq., for *Beaumontia grandiflora*; to Mr. Wiggins for *Cyclamen Persicum* (*giganteum*); and to Mr. Dixon, Norwood, for a group of plants. Messrs. Veitch sent *Masdevallia Harryana*, a name which now is substituted for *M. amabilis*.

Messrs. Veitch were first for Hyacinths, and many other Prizes were awarded.

FRUIT COMMITTEE.

A Cultural Commendation was given to Mr. J. Hudson, gardener to J. C. Imthurn, Esq., for Lady Downe Grapes. A bunch of the same variety was sent by Mr. Kemp, gardener to the Duke of Northumberland, kept in his new registered Grape rail and

* An error for *A. geminiflora*.

stand, which was approved by the Committee, but it was suggested that bottles should be used instead of zinc. Mr. Ross, gardener to C. Eyre, Esq., took the First Prize for Apples, Mr. Miles and Mr. Parsons also obtaining Prizes. Mr. Ross was the only exhibitor for Snow's Winter White Brocoli.

SCIENTIFIC COMMITTEE.

The Secretary brought a portion of a small branch of a Cedar the upper end of which had perished, though much larger in diameter than the part beneath it which had been injured by the frost of 1866; it illustrated the fact that the injury induced by frost is frequently not fully apparent till after the lapse of some years.

A plant of *Iresine Herbstii* was sent from the Society's garden at Chiswick, in which half of the whole plant was green while the other half was red.

Prof. Thiselton Dyer pointed out that the bright pink bracts of *Dalechampia Roezliana* acquire a green colour as the fruit is developed.

GENERAL MEETING.

J. BATEMAN, Esq., F.R.S., in the Chair.

Attention was again called to *Toxicophlœa*, which scarcely differs from *Carissa*, and to the curious *Azalea linearis* sent by Messrs. Standish. Prof. Thiselton Dyer then commented on General Pleasonton's theory respecting the effect of coloured glass on the growth of Vines. Violet light was anything but advantageous for two of the things which were most essential to the growth of plants—the formation of chlorophyl and the evolution of oxygen from the leaves. He could not, therefore, encourage the adoption of this system. Mr. Bateman then observed that care should be taken in staging Orchids that their tints were not overwhelmed by the primary colours of Hyacinths and Tulips.

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I. On the Production of Honey-Dew. Translated in Abstract from a Memoir by M. Boussingault (*Comptes Rendus*, Jan. 8, 1872), by W. T. THISELTON DYER, B.A., B.Sc., F.L.S.

[Read April 3, 1872.]

ON July 21, 1869, at Liebfrauenberg, the leaves of a Lime were coated on their upper surface with an extremely saccharine viscid matter. The tree, in fact, afforded an example of the production of honey-dew, a manna-like substance, which is frequently observable upon the Lime, the Black Alder, the Maple, and the Rose. I have myself noticed it upon a Plum-tree, and—which is a very rare occurrence—upon a young Oak.*

On the 22nd the honey-dew was sufficiently abundant in the morning to fall in large drops upon the ground. It was a shower of manna. At three o'clock the saccharine matter no longer remained fluid upon the leaves which were exposed to the sun. It had sufficient consistency not to adhere to the fingers when touched ;

* [A saccharine substance exudes from the leaves of *Quercus mannifera* in Kurdistan. (Lindley, *Bot. Reg.*, May and June, 1840.) Such a secretion from the Oak is more than once alluded to by Latin poets. In the Golden Age—"duræ quercus sudabunt vescida mella." (Virg. *Ec.* iv., 30.) Martin remarks (Virg. ii., 36)—"It is no uncommon thing to find a sweet glutinous liquor on Oak leaves."—W. T. D.]

it formed, in fact, a sort of transparent and flexible varnish. Out of the sun the honey-dew still retained its viscous condition.

On the 23rd, at seven in the evening, several leaves at the extremity of a branch were washed and sponged, so as to remove all the saccharine matter. At six o'clock the following morning the leaves which had been washed seemed free from honey-dew, but, on examination with a lens, minute glistening dots, due to very small drops, were observable. At seven the same evening the appearance of the leaves remained the same. The day had been warm; the temperature in the shade 84° .

On the 25th numerous spots of honey-dew were scattered over the leaves, but there were none upon the principal veins; at three o'clock the temperature was 86° .

During the night a violent shower removed a great part of the honey-dew formed during the evening. It became, therefore, impossible to follow, as had been proposed, the progress of the secretion upon the leaves washed upon the 22nd. A swarm of bees settled upon the tree.

On the 27th the whole of the honey-dew had disappeared, in consequence of the rain which fell during the evening of the 26th. The temperature had stood at between 62° and 75° F. On the morning of the 28th the leaves bore numerous spots of honey-dew, which had made their appearance during the night. On the 29th it had increased; on some of the leaves it occupied a third of the surface. At two o'clock the temperature was 84° . On the 30th the honey-dew was very abundant. The Lime-tree remained covered with it till the commencement of persistent rains, which took place at the beginning of September.

On two occasions, namely, July 22 and August 1, honey-dew was collected by washing the leaves. The solution, after treatment with lead subacetate to precipitate albuminous and mucilaginous matters, yielded a syrup in which crystals of sugar formed. On examination it contained a sugar analogous to cane-sugar, and also a reducing sugar. By fermentation with yeast the two sugars disappeared completely. In the fermented liquid, however, a substance remained possessed of very strong powers of right-handed rotation. This proved to be dextrine, already announced by Berthelot as existing in the mannas of Sinai and Kurdistan, and subsequently by Buignet in a manna occurring in "tears" (*manne en larmes*).

I have endeavoured to find mannite, and with especial care, because Langlois, an experienced observer, has found it in a

saccharine matter collected from the leaves of a Lime. Mannite is so easy to detect that I have not the slightest doubt as to its presence in the product studied by Langlois.

Optical observations have shown that the reducing sugar detected in Lime-tree manna is not glucose (Grape sugar), of which the rotatory power is 56° in the right-handed direction, but lævulose (inverted or fruit sugar), which has a left-handed rotatory power of 26° .

Taking into consideration those substances only which rotate the polarised ray, the composition of honey-dew will be:—

	July 22.	August 1.
Cane Sugar	48.86	55.44
Inverted Sugar	28.59	24.75
Dextrine	22.55	19.81
	100.00	100.00

These analyses show that the composition of honey-dew collected with several days' interval has not remained the same. No doubt one has no right to expect that the composition should remain precisely identical; what, however, is remarkable is the analogy which exists in composition between the honey-dew of the Lime and the manna of Mount Sinai analysed by Berthelot. Its composition is, in fact, identical with that of the honey-dew collected on August 1.

Cane sugar	55
Inverted sugar	25
Dextrine	20
	100

It is a discovery not without interest to have found the manna of Mount Sinai in the Vosges.

In attempting to compare by analysis the quantity of honey-dew existing upon the leaves of the Lime which was affected with the saccharine matter contained in the leaves in their normal state, we arrived at the following result:—

<i>In 1 Square Metre of Healthy Leaves:—</i>			
Cane Sugar.	Inverted Sugar.	Dextrine.	Weight in Grammes.
3.57	.86	0.00	4.43
<i>In Honey-dew Collected from ditto:—</i>			
13.92	7.23	5.62	26.77
<i>Difference:—</i>			
10.35	6.37	5.62	22.34

The amount of manna, therefore, which exudes from the affected leaves is considerable, especially when one takes into consideration the amount of dextrine, a substance which does not exist in the healthy leaves at all.* From calculations made upon a tree of the same age and size, the leaves of the affected Lime-tree would have a surface of 240 square metres, or rather of 120 square metres (equal to 145 square yards), since the manna only covers one side of their surface. It would result from this, that on July 22, 1869, the Lime bore 2 to 3 kilogrammes (equal to about 4 to 7 lbs.) of honey-dew, reckoned in a dry state.

In the normal conditions of vegetation the saccharine matters elaborated by the leaves, under the influence of light and heat, are distributed through the organism of the plant with the descending sap. In the abnormal state, which determines the production of the honey-dew, the saccharine matters are accumulated at the upper surface of the leaves, either because the movement of the sap is interrupted, or because it is retarded by the viscosity resulting from the formation of dextrine.

The production of honey-dew cannot be due merely to meteorological influences—to the effect of warm and dry summers. No doubt the Lime of Liebfrauenberg secreted it during a summer when there were periods of high temperature, accompanied by great dryness; we must not, however, lose sight of the fact that it was a single tree that was attacked by the malady, and that at a little distance there were Limes which were perfectly healthy.

It has been supposed that aphides, after having drawn the honey-dew from the parenchyma, discharge it again scarcely altered; but it is contrary to the results of analysis to assign it a composition similar to that of leaf-sap. It is, however, admitted that certain insects possess the faculty of determining the production of manna. Thus it is to the punctures of a coccus that Ehrenberg and Heimprich attribute the formation of the manna which is still found on the mountains of Sinai.

The manna falls to the ground from the air (that is to say, from the summit of a tree and not from the sky). The Arabs call it *man*, and they, as well as the Greek monks, collect it to eat upon bread in the same way as honey. I have myself seen it fall, collected it, and brought it to Berlin with the plant and the remains of the

* [The occurrence of dextrine in the living tissues of plants is at the most hypothetical. Sachs, *Phys. Vég.* (Fr. ed.), 377.]

insect. This species of manna is produced by *Tamarix mannifera*, Ehr. As with many other mannas it is the result of the punctures of an insect, which in the present case is *Coccus manniparus*, H. & Ehr. (Berthelot, *Ann. de Chim. et de Phys.*, sér. 3, lxvii., 83.)

The manna, consequently, collected in 1869 at Liebfrauenberg had not the same origin as the Sinai manna, though it had the same composition. At the time of its appearance upon the Lime no insects were observable. It was later that a few aphides were seen glued upon a certain number of the leaves.

I have already stated that after having washed the extremity of a branch, glutinous points were seen gradually to rise; at first scarcely perceptible, they increased each day, so as finally to cover the whole of the upper surface of the leaf. This slow and progressive development of the honey-dew was clearly effected without the intervention of aphides, which did not make their appearance till subsequently, like the flies and bees, either to feed upon the secretion or to pilfer it.

[In a subsequent number of the *Comptes Rendus* (Feb. 12) Harting states that honey-dew is produced by *Aphis tilia*, which, living on the under surface of the leaves of the Lime, drops its excrement on the upper surface of the leaves beneath. Analysed by Gunning at Amsterdam, it proved to consist of cane-sugar. Boussingault remarked, in reply, that the manna of Liebfrauenberg, like the Sinaitic manna analysed by Berthelot, contained, in addition to cane-sugar, fruit-sugar and dextrine. He added, also, that the leaves of the Lime contain considerable amounts of cane-sugar almost pure, the origin of which could not be attributed to insects.

A paper by Goëthe (*Œuvres d'Hist. Nat.*, par Martins, pp. 321—328) contains a similar conclusion. He says (p. 324): "I have seen Limes, of which the leaves seemed varnished, but where not a single insect was visible. The juice is secreted by the plant itself." Mr. Hanbury informs me that he has noticed the exudation of a saccharine matter from a Canella, and that after repeated cleansings it still made its appearance. He has seen also the occurrence of minute crystals of sugar upon the corolla of the Azalea. De Candolle mentions the same thing in *Rhododendron ponticum* (*Phys. Vég.* i., 238). This is, however, different to the secretion which takes place on leaves, because it is probably merely due to the loss of water from the flower preparatory to fading.

De Candolle remarks that granular secretions are found on the young shoots of the Larch, and are collected locally under the name of manna of Briançon; they also occur on *Salix alba*, and upon

some other trees. "We cannot affirm," he says, "either that they are a natural excretion, or that they are produced by insects" (*l.c.*, p. 240). Dr. Masters states in the *Treasury of Botany* (p. 38) that a manna-like substance is produced from species of *Alhagi*, and that it is an exudation from the leaves and branches of the plant only appearing in hot weather. Saline secretions from leaves have been more frequently observed. De Saussure states that an accumulation of saline matters at their surface often occurs in garden vegetables; transpiration being impeded, the leaves are ultimately destroyed (*Récherches*, 264, 265). De Candolle found a saline secretion from the leaves of a *Reaumuria* to consist of carbonates of soda and potash* (*Phys. Vég.* i., 237).—W. T. D.]

[Note read May 1.]

My attention has been drawn by Dr. Masters to two papers in the *Bull. de la Soc. Bot. de Fr.* for 1867, which advance a view of the origin of honey-dew quite different to that held by Boussingault. The method of investigation was exactly similar; the leaves were washed, and the mode of accumulation of the honey-dew subsequently was described in almost the same words. It is attributed, however, not to an exudation from the plants, but to the excretions of parasitic insects which were to be found on the foliage above that on which the honey-dew made its appearance. The insects, it is stated, have the power of projecting their excretions a distance of 4—5 inches, and it is thought that the action of the wind would convey them even further. Rivière appears to have been the first to observe this curious habit, and to have been confirmed by other entomologists. After the honey-dew had attained a thickened consistence it became the seat of growth of various microscopic Fungi, referred to the genus *Fumago* [but subsequently distributed amongst *Capnodium*, *Cladosporium*, and *Antennaria* (see "Journal of the Royal Horticultural Society," 1849, pp. 243—260)], giving the plant a blackened appearance. The invasion by a host of aphides of two Lime-trees resulted in the blackening of a terrace which they overshadowed, and of the seats placed upon it. In the case observed by Boussingault it is difficult to think that so careful an observer would not have satisfied himself thoroughly of the absence of

* Mr. Douglas, of Loxford Hall Gardens, Ilford, stated after the meeting that he has some Orange-trees at the back of a Cucumber-house which are frequently affected with honey-dew, though no green-fly ever gets near them, and that he has long been perfectly satisfied that honey-dew is not the result of insect agency.

aphides from the Lime-tree he examined. Moreover, it was only one tree which was attacked; had aphides been the cause of the honey-dew, it is hardly likely that other trees at a little distance would have been, as was the case, perfectly healthy. The conclusion appears to be that while in some cases honey-dew is due to the presence of aphides, in others it is an independent result of a diseased condition of the affected plant.

W. T. D.

II. On the Fertilisation of Grasses. By J. BOSWELL-SYME, LL.D.,
F.L.S.

[Read April 17, 1872.]

THROUGH the kindness of Professor Thiselton Dyer I have had an opportunity of reading Dr. Spruce's paper on the "Fecundation of Grasses" (Journ. R. Hort. Soc., n.s. iii., pp. 4—9.) As I do not find in it any record of observations bearing on the fertilisation of Cereals, there is no necessity for me to discuss the opinion expressed by Dr. Spruce on the subject of the cross-fertilisation of Wheat. There are, however, two points in which his experience of South American Grasses is at variance with what occurs among our British species—first, the change of colour of the anthers from some shade of purple to yellow and back again to purple; and second, that "the absence of odoriferous flowers from the Grasses seems to show that insect aid is not needed for effecting their fecundation, but does not render its accidental concurrence a whit less unlikely," which seems to imply that insects are not attracted by inodorous flowers, and as a special application of this, that Grasses when in flower are not regularly visited by insects. First, in British Grasses and those ordinarily cultivated there are a few which have their anthers always purple (*Corynephorus canescens* and *Molinia cærulea* for example); there are many in which they are pale yellow or yellowish-white (e.g., *Spartina*, *Nardus*, *Lepturus*, and all the commonly-cultivated Cereals); there are many also in which some individuals have purple, and others of the same species have yellowish-white anthers (e.g., *Alopecurus pratensis*, *A. geniculatus*, *Phleum pratense*, *Anthoxanthum*, *Dactylis*). But in this case we never find the two colours of anthers on one root. My attention was directed to this by the Rev. W. W. Newbould, who wished me to see if there were not other differences between the white and

purple-anthered forms of *Alopecurus pratensis*, but I have been unable to find any. I was induced to examine other Grasses in which similar differences in the colour of the anthers occur, in order to assure myself that the two forms of *Alopecurus pratensis* could not be separated even as named varieties. In most cases the anthers fall off without changing colour, but in a few species (*Alopecurus pratensis*, *A. geniculatus*, *A. agrestis*, *Dactylis glomerata*) they change from purple or pale yellow to fulvous brown; but this change does not take place unless they are empty and dead. I suppose it is much as we see in a beech hedge on which the leaves remain in winter, but changed to brown. On the second point, in Britain most of the plants whose flowers are most attractive to insects are either scentless or with a disagreeable odour; look for example at *Salix*, *Centranthus ruber*, *Silene inflata*, *Lilium Martagon*, *Echium vulgare*; of these *Lilium Martagon* is the only one with a powerful odour, but very few persons would call it an agreeable one. In the special case of Grasses, I refer to one of the best authorities for Lepidoptera, Dr. H. G. Knaggs. He says, under "Flowers as Alluring Baits for Moths" ("Lepidopterist's Guide," ed. ii., p. 92): "Grasses (especially *Glyceria fluitans*).—*S(tilbe) anomala*, *A(grotis) tritici*, *cursoria*, and *valligera*, *L(eucania) impura* and *conigera*, *N(octua) umbrosa* and *glareosa*, *T(riphæna) fimbria*, *A(pamea) gemina*, *C(elæna) Haworthii*, *M(iana) arcuosa*, and many others." In my own experience I have found it useless to sugar for moths when *Glyceria fluitans* was in flower in the vicinity; on looking at it I have seen the spikelets invaded by hosts of *Leucania obsoleta*, *pallens*, *impura*, *conigera*, *Miana fasciuncula*, *Noctua umbrosa*, *Agrotis exclamationis*, *Triphæna pronuba*, &c. On Deal sandhills I have noticed a similar phenomenon, when the attraction was the flowers of *Psamma arenaria*; and at Balmuto *Dactylis glomerata* is attractive to moths, though less so than the two other Grasses named. Every coleopterist knows that a field of Grass in flower is one of the best grounds for "sweeping," and expects to find in his net a host of individuals belonging to genera not included in Diptera.

[Extract from a letter read March 5, 1873.]

I made out pretty well about the intra-paleal fertilisation of Wheat this year, and have been meaning to send you the results. The anthers are empty except a few accidentally adherent grains when

they are excluded.* This was proved, first, by extensive examination in the Wheat-fields, and by bringing a large supply of Wheat-heads about to flower into the house and putting them in water, with a paper under the glass so as to see if any pollen fell down; secondly, by the examination of the stigmas of flowers with their anthers still included; thirdly, by the fact that the stigmas are never protruded at all.

As to other Grasses, *Dactylis glomerata* has pollen in the anthers at the time they appear. This is readily seen by striking the culms with a stick, when a cloud of pollen flies out. *Anthoxanthum odoratum* is protogynous, but some of the anthers are protruded before *all* the stigmas of the panicle are. *Alopecurus pratensis* is protogynous; all the stigmas in a panicle are protruded about twenty-four hours before any of the anthers are. This was tested by placing bits of paper on the growing plants as soon as the stigmas appeared.

III. On Recent Progress in the Scientific Aspects of Horticulture.

By W. T. THISELTON DYER, B.A., B.Sc., Professor of Botany to the Royal Horticultural Society.

[Introductory Address at the Birmingham Congress, June 26, 1872.]

It has fallen upon me, rather as a matter of official obligation than from any special qualifications, to open the proceedings of this Congress with some remarks upon the more theoretical matters connected with horticulture which possess anything of novelty. First of all, however, it may be well to consider in what direction the utility of such a meeting as we are now holding appears principally to lie. If I may express my own conviction, it is in the advantage of having an opportunity of discussing in an informal way matters connected with horticulture which from time to time come into prominence. I do not think it necessary that the subjects brought forward should be particularly novel or particularly recondite, but only that they should be such as happen to occupy our minds. Nor do I think that the value of the Congress is to be estimated by the success or dulness of any particular meeting; on the contrary,

* Confirming the observations of Dr. Boswell-Syme, "Journ. of Botany," 1871, p. 373, and Bidard, "Comptes Rendus," 1869, p. 1486.

what we should keep in view is, the usefulness of having an annually recurring occasion for the discussion of matters which during the preceding year have fixed our attention.

Many persons, it may be said, who pursue horticulture as a means of livelihood care little for any addition to their knowledge which does not imply also an addition to their gain. They are not to be blamed; nor are we likely, in a meeting like the present, to neglect the interests of practical men. But there are others who desire to know, merely for the sake of knowledge, more than those who have gone before them have known about the facts of plant life. I do not think that men of practice will object to our discussing amongst other subjects some which seem to possess no immediate practical bearing. It was thought, however, this year, that there might be several advantages in roughly classifying our business. Nevertheless, it must be remembered that both science and practice merge under the general head of knowledge. A man who finds out a better method of growing some plant adds to what we know, just as another adds to it who makes out some obscure point in vegetable structure. The real difference between science and practice consists in this, that science takes the whole field of Nature for its territory, while practice contents itself with a particular portion of it.

I am convinced, however, that practical men, if they were so disposed, could with little trouble contribute very usefully to purely scientific knowledge. The harvest of facts is ready; it only needs those who will gather it systematically. To record carefully facts of importance is to confer a benefit upon science which it is impossible to estimate too highly. It is not necessary to devise at once an explanation, or to hesitate too much if the matter does not square with preconceived ideas; it is only necessary to be sure, as far as we can be so, that we have observed correctly. Turn over the volumes of Mr. Darwin's "*Animals and Plants under Domestication.*" Every page is noted with references to ephemeral and apparently trivial sources of information, of which it was reserved for this sagacious writer to appreciate the value. No one need despair of a carefully-recorded fact failing to find its place and use.

How important it would be to thoroughly comprehend the principles of variation! Yet of the numerous persons who raise new varieties of plants, how few there are who record anything of their experiences! Some, no doubt, have acquired a kind of intuitive tact in working with plants. Still, anything like systematised knowledge in the matter is still to a great extent a want to be sup-

plied. Mr. Darwin has grouped together in a most admirable way the facts, in many cases very scanty, which he had been able to collect before writing his book. On many of these subjects it would be very desirable to obtain the fruits of more ample experience. I am glad, therefore, to say that Dr. Denny is about to read us a paper on the relative influence of parentage in cross-fertilising plants, and I think I may point to his work as a proof of the fact that some attention to its theoretical bearing is no obstacle to its practical success. An accumulation of evidence on this subject is very desirable. A more extended study of bud-variation is also a matter which I would commend to your notice. Mr. Darwin arrived at the conclusion that bud-variations, when they occurred at all, usually assumed at once a decided and permanent character. At the same time he thought that this might possibly be a delusion from slight varieties being overlooked. The attention which is now paid to variegated Pelargoniums seems to offer an opportunity of seeing whether this conclusion is really true. Again, from time to time various curious facts have been recorded with respect to the direct influence of the pollen, not on the seed alone, but also on the female parent. Mr. Anderson-Henry has stated that the flowers of a pale *Calceolaria* became stained after the application to the flowers of the pollen of a coloured kind. Maximowicz has described a change in the shape of the capsule of a Lily in the direction of that belonging to the pollen-parent. Again, the fruit of different cultivated *Cucurbitaceæ* has by more than one observer been stated to be affected if the pollen of some other kind has got access to the flowers. None of these cases are completely free from ambiguity, and the whole matter might easily be tested by those who occupy themselves much with artificial fertilisation. The instances would certainly be rare, but if they could be established free from all reasonable doubt it would be a matter of very great interest. The difficulty lies in the possibility of the supposed influence of the pollen being really due to a bud-variation. If, however, the same kind of variation were to follow more than once in the same plant the application of foreign pollen, it would be almost certain that this was the cause. *A priori* we know that it is not improbable, since analogous cases occur amongst animals.*

* Maximowicz's paper is translated in Journ. R. Hort. Soc. n.s. iii. pp. 161—168; Mr. Anderson-Henry's case of the *Calceolaria* will be found in n.s. vol. ii., p. 77; for *Cucurbitaceæ* see Darwin, "Animals and Plants under Domestication" i., p. 399.

The nomenclature of plants is a subject upon which it is becoming more and more necessary to have some common understanding between botanists and horticulturists. At the last meeting of the Floral Committee a plant was submitted to it with the name of *Lilium bulbiferum Thunbergianum aureum nigro-maculatum*. As Lilies are now favourite objects of culture, this name is quite likely to receive further distinctive additions. Now it seems to me that for trade purposes such a name must be almost a deterrent to purchasers. People grumble often at a plant having two Latin names; they will grumble still more at its possessing half-a-dozen. The remedy, I think, lies in adopting De Candolle's suggestion—that we should restrict Latin names to species and varieties occurring spontaneously in Nature, and should give to forms which make their appearance in gardens names in a modern language. This expedient would tell us in a moment whether any particular plant was or was not of garden origin, and from the language the name would also inform us whether it was raised by English, French, or German horticulturists. Still, certain modifications of botanical nomenclature must, I think, be tolerated in horticulture. In the first place, reliance has often to be placed upon distinctions which, in a botanist's eyes, seem of little importance. It cannot be objected very much, therefore, if very well-marked varieties or sub-species are treated as if they were species for purposes of garden nomenclature. If there is some tangible character by which they can be distinguished from their allies, it is easy to ascertain by reference to books the rank that botanists give them. It is often necessary, as more is known about the plants which grow upon the earth's surface, to change generic and specific names. There is usually a good reason to be assigned for doing this, but it is undoubtedly a grave source of inconvenience. Botanists will not, therefore, blame horticulturists if they keep to many of the old names, of which it is generally easy to determine the most recently recognised equivalent. *Odontoglossum crispum* is the original and lawful name of *O. Alexandra*, but it is not now very likely to supplant the name most in use. When plants have been placed, however, from the first in genera which are obviously wrong, I think an effort should be made to give them their proper position. Having made the concessions above mentioned, I feel that it is an absolute duty to protest against plants avowedly of garden origin having, under any circumstances, names given to them which are of the same form as those which are given to species spontaneously occurring in Nature. The case of hybrids is an exception, but it would be better if the name

given to these always indicated both the hybrid origin and the parentage.

There is one branch of science intimately connected with horticulture in which we are far from reaping at present the practical benefit of knowledge. This is meteorology. It is too much, I am afraid, to hope that we shall ever possess the slightest control over the asperities of weather, but it is scarcely too much to look forward to improved methods of foretelling what is in store for us, as well as improved methods of obviating its effects. The study of careful records of daily observations will, no doubt, eventually reveal not only some of the causes that influence weather itself, but will also throw light upon changes in public health, with which it cannot be doubted that weather is closely bound up. Such records the Royal Horticultural Society kept at its Chiswick Garden for forty-four years, and the results of the observations have been lately printed by Mr Glaisher at the Society's expense. The practical information which can be deduced from this volume is not, perhaps, considerable; it is, however, a contribution to the accumulated stock of records which will one day find their utilisation.

The mean temperatures at Chiswick, as deduced from the whole observations of forty-four years, starts from its lowest point of 35·8 deg. on Jan. 6, and rises more or less gradually to its highest, 64·4 deg., on July 17. If climate would only pursue this even course with some approach to constancy, vegetation would follow it with a clockwork regularity. We know, however, to our cost, that it does not do so, and very considerable deviations take place to one side or the other of the mean temperature. Both are injurious. A premature development of vegetation lays it open to subsequent injury, and comes to much the same thing, as regards its effects, as a late frost.

What the horticulturist really has to fight, then, are the effects of cold. The precise mode in which plants are affected by it is hardly completely known. In many cases, no doubt, the vital properties of the protoplasm contained within the cells receive an injury from the direct effect of low temperature from which there is no recovery. In other instances death is not the inevitable result even from freezing; but, as is well known, if thawing be gradually effected, no great harm will be suffered. Some curious experiments published by Becquerel appear to show that cold below the freezing-point, like the temperature of boiling water or the electric discharge, produces an alteration in the cell walls, which renders

them more pervious to fluids, and therefore no longer capable of retaining their cell contents.

It appears to me that the pyramid fruit-trees and espaliers, which are now so much grown, are peculiarly exposed to the effects of frost, as they are pruned so that each branch overhangs, and consequently protects any below it to the least possible extent. It ought, nevertheless, to be possible to devise some cheap and effective way of protecting temporarily trees of this small size from frost. In view of any expedients of this kind, any means of anticipating their need would be of the greatest value. It may be well, therefore, to mention that in spring a dry state of the air, indicated by any very considerable difference in the readings of the dry and wet bulb thermometers, is likely to be followed by frost. The reason is simple: the night frosts, which injure vegetation, arise in the main from the loss of heat from the earth's surface by radiation. If there is much moisture present in the air this loss of heat is impeded. The luminous heat radiated from the sun passes through atmospheric moisture with little impediment, but the obscure or non-luminous form in which the earth radiates it back again is caught by it, as it were, in a trap. On May 17, at Blackheath, near London, the air was nearly saturated with moisture, the degree of humidity being represented by 94 deg., and the lowest temperature of the air by 44 deg. Both temperature and humidity fell, *pari passu*, till May 20, when the first stood at 32.6 deg., and the other at 69 deg. It would be of the more importance to have warnings of the probable occurrence of low temperature, because Mr. Glaisher has shown from the Chiswick observations that periods of deficiency of temperature below the mean are often prolonged to as much as a fortnight. In the forty-four years there were eighty such. I feel strong hopes that the telegraphic communications about the weather, which the Meteorological Office now collects from stations in the British Isles and Western Europe, will eventually lead to warnings of probable falls of temperature being obtained.

The apparently paradoxical fact that the temperature often falls lower, and plants correspondingly suffer more from frost, in low grounds than in those which are adjacent and higher, has often been observed, and it is important to remember it as a practical point in planting and laying-out grounds.* The ex-

* See Dines "On the Temperature of Hill and Valley," in the Journ.

planation may be partly due to the downward gravitation of air cooled at the surface of the higher ground, and its consequent collection in low-lying places and hollows.*

In every department of scientific work it from time to time happens that announcements are made which take completely by surprise those who know what has really been made out by legitimate investigation in the subjects upon which they bear. Nevertheless, the outside world always takes them up with more or less of uncritical faith. A paper published during last year by General Pleasonton, "On the Influence of the Blue Colour of the Sky in Developing Animal and Vegetable Life," appears to me to have received a great deal more attention than its utter absence of any genuine scientific character deserves. Subsequently presented to the French Academy, it has been the subject of an article by Duchartre in the *Bull. de la Soc. Cent. d'Hort. de France*. This writer points out some of the mistaken scientific views held by General Pleasonton, but though apparently

Meteor. Soc. 1872, pp. 100—102. The places compared were Denbies, near Dorking, 610 feet, and Cobham, six miles distant, 65 feet above the sea-level. The maximum temperature of the hill is below that of the valley, the difference averaging from 3 to 3½ deg. But in times of extreme cold the temperature on the hilltop never descends so low as in the valley. Out of forty-three occasions when the temperature has been below 25 deg. at both places, the average on these occasions upon the hill has been 23·3 deg. against 18·9 deg. at the valley. The temperature has been six times below 10 deg. at the lower station, giving an average of 6 deg., while on the hilltop upon the same height it averaged 15 deg. On the morning of December 31, 1870, the minimum at Cobham was 1·2 deg., at Denbies 14 deg. The popular opinion assigned for this difference is that the air of the hill is drier than that of the valley; the observations give no foundation whatever for such an opinion. Professor Ragona-scina (*Proc. Meteor. Soc.* iii.), and Mr. Glaisher (*Proc. Meteor. Soc.* v.), have arrived at the conclusion that through the day the higher strata of air are the colder, that towards evening they approach nearly to equality, but that at night the higher strata of air are the warmer.

* The stratum of air in contact with ground covered with vegetation cools under nocturnal radiation sometimes 8, 10, or 12 deg. Fah. below that of the air a few yards above. Thus Humboldt and Bonpland found dew on the surface of the ground when the temperature of the air at some little distance above it was 70 to 80 deg. The air cooled in this way would gravitate into hollows and low-lying places. This seems to explain the fact observed by Martins that figs, olives, laurels, etc., perished in low parts of the Botanic Garden at Montpellier, while they escaped a few yards higher in equal conditions of shade (Becquerel "Sur les Forêts et leur Influence climatique," *Mém. de l'Institut* 35, pp. 456—459).

inclined to reject the whole narrative as a hoax, thinks that it is vouched for by testimony too respectable not to require some explanation.

For my own part, having carefully read the original paper, I do not believe, for reasons I have elsewhere stated,* that blue or violet light had anything to do with the extraordinary growth of the Vines, supposing that really to have taken place as described. I am slow, indeed, to comprehend how such a physical condition as exposure to blue light can be equally beneficial to the growth of Vines, the rearing of poultry, and the invigoration of the constitution of invalids. The erroneousness of the facts argued from, the absence of all knowledge of modern publications in vegetable physiology, and the wildly crotchety theories, such as electricity having produced the giant trees of California, disincline me, I must confess, to attach any serious weight to either General Pleasonton's views or his results.

I must not occupy your time with longer remarks. I will only, in conclusion, call your attention to the useful summary of the history of the *Phylloxera vastatrix*, given by the President of the Linnean Society in his annual address, and printed in "Nature" for June 13 last, and also to the completion by Decaisne, with the 10th volume of the "Jardin Fruitier du Muséum," of the history of cultivated Pears.

IV. The Relative Influence of Parentage in Flowering Plants. By J. DENNY, M.D.

[Read at the Birmingham Congress, June 26, 1872.]

ONE of the chief objects of my paper is to promote the study of a subject full of scientific interest, and of the greatest importance to the practical horticulturist, but which, for the want of accumulation of data derived from accurate experiments, at the present is involved in much obscurity.

If we could, by the observation of results acquired through the medium of a series of carefully-performed experiments in artificial fertilisation, obtain any reliable evidence indicative of the relative influence the male (or pollen) and the female (or seed) parents bear

* Gard. Chron. 1872, p. 396.

in the production of their progeny, it would assist us immensely in carrying out our designs for the improvement in the form and colour of our flowers, and the quality of our fruits and vegetables. If, for instance, we knew that either parent was prepotent in conveying to the offspring certain qualities, say, of flavour and aroma, or of size and form, as regards our fruits, or of colour, perfume, form, or substance in our flowers, we should be able to form some approximate idea of the result that would follow our fertilisations. A knowledge too of the ancestry of the varieties we purpose employing would also be desirable, to enable us to make allowances for the modifications likely to ensue from the tendency to reversion towards an ancestral type—a propensity which seems to be inherent in all plants that have been much changed from their original state by artificial breeding.

It would also be a matter of scientific interest, as well as perhaps of practical importance, to know if the proportionate influence borne by the respective parents in crossing varieties is the same as in crossing species?

As the admission of fecundation is no test of the plants employed belonging to the same species, have we any well-defined line of demarcation or practical test by which we can distinguish between species and varieties, so that we may know when to employ correctly the term hybridisation, and when cross-breeding?

Does there exist any real difference in the powers or quality of the pollen of the long and short stamens from which we may expect to derive any specific effect on the progeny by the exclusive employment of the one or the other, or to succeed more readily in effecting difficult crosses?

Do certain states of the atmosphere, and if so what apparent conditions of it, favour fecundation?

Can any clue be obtained, or suggestions offered, to account for the antipathies that are found to exist between apparent varieties, as well as affinities between what are considered by botanists to be distinct species, precluding fertilisation in the former and rendering it easy in the latter?

These are a few of the most important points that are constantly occurring to the practical horticulturist. To how many of them does our knowledge admit of a satisfactory reply being given?

From early youth I have taken much interest in artificial fertilisation, but have kept no register of my crosses or their results, until the controversy arose respecting the tricoloured *Pelargoniums*, as to whether their leaf-markings could be reproduced by fertilisation

and seed, or whether they were sports only, and owing to a diseased condition of the plant.

To ascertain for my own satisfaction the truth upon these points, as well as with the object of obtaining, if possible, some information regarding the relative powers the respective parents exert over their progeny, I commenced a series of experiments upon the scarlet section of the *Pelargonium*, employing varieties of the most opposite and varied character, and crossing them in every conceivable way.

I conducted these experiments, too, with the utmost possible care and minuteness of detail, both as regards the methods I adopted for preventing self or insect fertilisation, to ensure the fertilisation being effected by the desired pollen only; and as regards the keeping an exact register of every cross, as well as a record of their results.

By this means I soon arrived at a satisfactory conclusion as regards the points at issue respecting the transmission of variegation of the foliage by fertilisation, from the fact of its being manifested to a greater or less degree, in as large a proportion as from 50 to 60 per cent. of the offspring, where the green zonal had been fertilised by the pollen of the variegated. I also obtained some valuable information indicative of the powers the respective parents exert upon various other points in connection with the transmission and modification of the foliage and habit of the plant, as well as of the colour and form of the flower.

From the information thus derived, I am of opinion that by careful and persistent fertilisation, under the guidance of the observation of results, it is possible to produce almost any modification in the character and habit of our plants, or variety of colour and form in our flowers, we might desire. For I am satisfied that by these means we possess a much greater power of moulding our flowers in accordance with preconceived design than is generally supposed; and, moreover, I think it possible that ultimately some insight may be obtained into the working of the laws that govern procreation in the vegetable kingdom, and that produce variation in our fruits and flowers.

The result of my experience derived from these experiments, as regards the relative influence of the parents, certainly tends in the reverse direction to my previous ideas, which were derived from books, from which I gleaned that the form of the flower and constitution and habit of the plant were inherited from its mother, whilst the colour of the flower only was supposed to be conveyed

by the father. The recorded results of my crossings indicate an immense preponderance of influence over the progeny on the part of the father in all respects—in colour and in form, in the quality, in size and substance of the flower, as well as in the production of variegation of the foliage, and in the habit and constitution of the plant also, provided the plants employed are of equal strength.

I wish to be distinct upon this point of relative strength of the parents, because it seems to me that upon the equality or the preponderance of strength on either side very much hinges as regards the results we obtain from our crossings, for power of constitution exerts most unmistakable influence, and where it preponderates on the part of the seed-parent it will modify the otherwise prepotent influence of the pollen-parent. This modifying influence manifests itself most as regards the habit and foliage of the plant, and next as regards the form and substance of the flower, and lastly as regards the production of a blend in the colour of the flower.

To illustrate what I mean, if the pollen of a flower of *Pelargonium*, of brilliant and decided colour, but of bad form and substance, belonging to a plant of weakly constitution, be applied to the stigma of a finely-formed, thick-petalled flower of a plant possessing a vigorous constitution, some few of their progeny will be improved in the form and substance of the flowers and habit of plant, with, perhaps, some blend in the colour, showing that the preponderance of vigour in the seed-parent had exerted a certain amount of influence; but even under these circumstances much the greater proportion of the progeny would either resemble the father in all respects, or show reversion towards former progenitors or an original type.

I will quote a case or two in point from my note-book. During the summer of 1869 I raised about 140 seedlings from crossings between Lord Derby and Leonidas. In about half of these Lord Derby was the pollen and Leonidas the seed parent, and half resulted from crosses effected the reverse way. The flower of Lord Derby possessed the fine qualities, both as regards form of petal and smoothness of texture, but was wanting in depth and brilliancy of colour, and also in substance; and the plant was deficient in vigour of constitution as compared with Leonidas. The flower of Leonidas was much inferior as regards form and quality, but of greater substance and brilliancy of colour, as well as larger than that of Lord Derby, and the plant possessed a vigorous constitution.

These seedlings flowered during the spring and summer of

1870. Of that portion in which Lord Derby was used as pollen-parent and Leonidas as seed-parent, about one-third resembled in all respects their father; a few produced flowers very considerably in advance of Lord Derby in size, in substance, and in colour of the flower, and with a superior constitution and habit of plant, showing the influence of the mother in combination with the father's. (I would instance Sir Charles Napier, which resulted from this cross, as an example.) Of the remaining two-thirds, a few very nearly resembled Leonidas in flower, except being paler in colour, and having a somewhat increased breadth of petal, resulting from the father's influence (for instance, Iago); but a large proportion were inferior, showing reversion towards an ancestral type.

Of that portion in which Leonidas was used as pollen and Lord Derby as seed parent, nearly half resembled in all respects Leonidas, and the rest were much inferior; not one showed that any appreciable amount of influence had been exerted by the mother towards improvement. It will be observed that in this cross the pollen-parent possessed both the inferior flower and the most powerful constitution also. As regards the habit of these seedlings, they were all more robust than those of the mother.

The same season I raised about sixty seedlings from a cross between Celestial and Lord Derby. Celestial, which was used as pollen-parent, possessed a brilliant magenta-coloured flower, but of very bad form and substance, with a weakly constitution. From this batch of seedlings a few produced flowers of a colour very similar to the father's (but somewhat less brilliant), and with a great improvement as regards the form, quality, size, and substance of the flower, accompanied, too, with a fair habit and constitution of plant, showing a marked influence on the part of the mother, which in this cross was decidedly the stronger of the two parents. Ianthé resulted from this cross. The remainder of this batch were mostly of very bad form and quality of flower, and weakly constitution; but there were some very brilliant and novel colours. Interesting examples of colour blending, amongst them were carmine, rose-crimson, pinks, and vivid scarlets—some in all respects resembled Celestial.

My large seedling nosegay Wellington was the result of a cross between Le Grand (nosegay) and Leonidas, Le Grand being used as pollen-parent. Here the plants were about equally vigorous. Wellington resembles in the character of its flower its father, but with an increased breadth of petal derived from its mother; the colour of the flower is nearly that of the father's also, but it is some-

what a blend, the purple hue of Le Grand and the deep scarlet of Leonidas having produced a very dark crimson scarlet, almost maroon. The foliage, too, of Wellington is most distinctly of the nosegay type; its habit still more vigorous than either parent.

In breeding for variegates, and using the variegates (which, as a rule, are wanting in vigour) as pollen-parents, and the robust green zonals as seed-parents, about half the number of their progeny showed variegation, and possessed weakly constitutions, the remainder being green zonals; upon the order of procedure being reversed, by which the pollen-parent became the parent of the greater vigour, the mother's influence was almost *nil*.

I believe that it is owing to the existence of a difference in the vigour of the respective parents that the production of novelties and varieties in our flowers (and probably in our fruits too) mainly depends, and that were it not for a preponderance of power on the mother's side, the progeny would almost invariably resemble the father; and hence the immutability of our flowers and vegetables, which are annually reproduced from seed, the result of self-fertilisation.

But I consider another source of variation exists in the tendency in all flowers (and fruits) that have been artificially bred up to a state far in advance of their original condition, to revert towards former progenitors (especially under the influence of self-fertilisation), by which means new combinations of ancestral properties are formed, and therefore new varieties. Even under artificial fertilisation I find in the *Pelargonium* this tendency to reversion to exert very considerable modifying influences. I have especially observed it as regards the colour of the flower; for instance, the magenta shades that have been produced upon the scarlet *Pelargonium* have resulted from the crossing of pinks upon scarlets; and very many of my seedlings—the offspring resulting from the crossing of two magenta-coloured flowers—have produced pink ones as well as scarlets, showing reversion to both the colours of their immediate ancestors. It is a point worthy of observation whether the colour of a flower or a change in the character of a plant that has recently been obtained are conveyed to their offspring in the same proportion as to numbers and with the same certainty as those of long standing. I think not.

A remarkable instance of reversion as regards foliage occurred in two out of a number of seedlings raised this spring from Violet Hill Nosegay as seed-parent, crossed by *Ianthe*, with the object of obtaining variety in the flower. Two of this batch of seedlings

have come variegates. Now Violet Hill was bred for variegation, and was planted out at Messrs. Henderson's establishment at St. John's Wood in the spring of 1864, with a view to its breaking into variegation, which it did not do; but it was selected, and subsequently sent out, for its flower, and on account of its dwarf habit of growth.

My notes would furnish innumerable examples in support of the theories I have founded upon them, did time admit of my going further into detail. I would observe that I have purposely quoted the results of crossings which produced varieties that have been sent out by Mr. W. Paul, that they might, if desired, be referred to, and compared with their parents.

A close analogy seems to me to exist between the vegetable and the animal kingdoms as regards the ill effects produced by breeding in-and-in, and the good resulting from crossing opposites, for I find it to be necessary for the maintenance of improvement in the flower, and the constitution of my seedlings, to introduce fresh varieties to breed from annually; and I find that crossing two flowers of the finest qualities does not produce such satisfactory results as where one of much inferior quality is employed. Of course it will be inferred from my previous observations that I use the superior quality flower as pollen-parent. I am of opinion that the decadence in many of our old florists' flowers is owing to their having been bred in-and-in, and from the repeated crossing of flowers of a precisely similar strain and qualities, with the object (and probably supposed only means) of reproducing flowers possessing certain peculiarities in markings or form, in accordance with the rigid rules prescribed for these flowers.

As regards the condition of the atmosphere that favours the effecting of difficult crosses, it would be no easy matter to note with any degree of certainty the precise period of each successful attempt, nor the precise condition of the atmosphere at the time. We read of special crosses having been effected under certain conditions of it, but I have never seen it specified what these conditions were. My experience indicates that bright clear weather and the hours of sunshine are conducive to fecundation.

I have alluded to the antipathies and affinities we find to exist, without any explicable cause; for instance, I have found it impossible to fertilise three or four varieties of the scarlet *Pelargonium* (viz., the Duke of Cornwall, Dr. Muret, Beauté de Suresnes, and all that section of the doubles which sprang from Beauté de Suresnes), which to all appearance are mere varieties of the zonal

section, save with one another; and, showing the existence of affinity between what are supposed to be distinct species, I have fertilised without much difficulty a variety (*peltatum elegans*) of the Ivy-leaved section by the pollen of the zonal.

I have also alluded to the possible difference in the respective influence of the parents in true hybridisation. Upon this point I have not sufficient evidence to form a fair opinion; but certainly in the seedlings I have raised between the Ivy-leaved and the zonal sections, their foliage (with the exception of some distinctive evidence of their being hybrids) resembles almost entirely that of their mother, which it will be observed is the reverse of my experience of the results produced between varieties.

Much has been written and said upon the difference in the quality and powers of the pollen of the short stamens, and if the supposed difference really does exist, it is a matter of considerable practical importance, and one worthy of further scientific investigation; but my experiments have hitherto failed to satisfy me of their possessing any difference. In an admirable article upon hybridisation, written by Isaac Anderson-Henry, Esq. (and which at different periods has appeared in nearly all the horticultural journals), he says "that, owing to the granules of the short stamens being smaller than those of the long ones, they can the more easily descend the tubules leading from the stigma to the ovaries, and consequently facilitate the crossing of a large-flowered variety, or species, upon a smaller one." I have not been able to detect this difference in size, although I have many times placed the granules of the long and short stamens side by side under a powerful microscope; nor, I believe, is it the opinion of physiologists of the present day that they do descend these tubules at all—in fact, it has been shown that they send down filaments through them to the ovules.

The arrangement of the anthers upon filaments of different lengths looks to me like a provision to ensure all parts of the body and legs of the insect coming into contact with the pollen as it passes down the flower to obtain the nectar, thereby rendering the fertilisation of the next flower it visits the more certain.

The visible effects of impregnation are frequently manifested with a rapidity almost equalling that of an electrical phenomenon. I have observed the petals of the Pelargonium, which, before impregnation, were quite firm, to fall within a few seconds of the application of the pollen to the stigma—a result due, I conclude, either to the immediate diversion of nourishment from the then

superfluous part of the flower to the organs of generation, or to the existence in the vegetable kingdom of a power analogous to the nervous in the animal, but of which we are as yet in total ignorance.

Lastly, I would remark that, to enable reliable conclusions to be drawn upon any of these points, we require an accumulation of data derived from the careful observation of very many un-biassed workers, whose results have been obtained from experiments conducted with scientific precision upon all our flowers and fruits.

Such an accumulation of recorded facts (if they could be obtained) would prove a source of the greatest interest to the philosopher, by their tendency to throw some light upon the working of Nature's laws, and could not but afford most valuable information for the guidance of the practical horticulturist; and moreover by freeing horticulture from all empiricism, place it in its true and legitimate position among the modern sciences.

[With regard to the influence of the size of pollen grains upon hybrid-formation, the following seems to be a case in point. It is quoted from the Report of the Massachusetts Horticultural Society for 1872, p. 184:—"Mr. Wylie found that generally the pollen grains of grapes were of oblong form, while those of the Scuppernong, the great wild grape of the South, were smaller and more spherical. He found that he could not fertilise the Scuppernong with pollen from other species, but he did succeed in impregnating the foreign grapes with pollen from the Scuppernong. His inference was that the pollen-grains being smaller in the Scuppernong than in other varieties, the canal through which they have to pass to reach the ovule in that species is also smaller, and thus he explained the results of his experiments. The smaller grains could pass through the large tube, but the larger grains could not pass through the small tube." There is the same misapprehension as to the part played by the pollen-grains as is alluded to above, but this does not affect the fact stated.—Eds.]

V. On a Thermometer for Taking Temperature at the Roots of Plants. By JAMES GLAISHER, F.R.S.

[Read June 26, 1872.]

THE temperature of the soil at different depths must more or less occupy the attention of gardeners and agriculturists, and more particularly in relation to the temperature to which the roots of plants are exposed. We possess but little information, even in experimental horticulture, as to the temperature of roots, nor of the luxuriance of some plants compared to others, which probably may be partly attributed to the different temperatures of their respective roots.

We know that improved culture improves plants; we know that temperature exercises a great influence, and it is probable that the temperature which reaches the roots is that which exercises the greatest influence. Considering, therefore, that the ascertainment of the temperature to which roots are subjected, in connection with their more or less luxuriance of foliage, of fruits, or of flowers, opens up an unexplored field of information necessary to the complete success of the labours of the gardener and horticulturist, I have for some time considered how best this information could be obtained, and have designed a thermometer with a tolerably sensitive bulb, which may be placed either at 1 inch, 2 inches, or 3 inches below the surface of the soil—a depth known definitely by a circular plate fixed upon the stem of the thermometer by bayonet joints, resting on the surface of the soil at 1 inch, 2 inches, or 3 inches from the centre of the bulb of the thermometer. I have considered it desirable that the whole instrument should be encased, both for its safety in carriage from place to place, and when in use that neither stones nor cats should injure it.

One of these is exhibited (fig. A), prepared for observation at these depths. The price of this instrument is 12s. 6d., to be furnished by Mr. Ackland, of Horne and Thornevaite's, 123, Newgate Street, under the condition that it has been previously examined and certified by myself as to its accuracy, and that no error so much as three-tenths of a degree shall be present at any part of the scale.

An instrument of this form for a depth of 6 inches would be 17s. 6d., under the same conditions of my examination before sale. As most roots are within 6 inches of the surface, these instruments

would suffice for such observations ; but other instruments for greater depths, on the same principle, could be made as required, under the same conditions of examination.

It is exceedingly desirable to be able to ascertain the degree of temperature surrounding roots nourished with different manures, particularly those which readily accept nourishment, and to ascertain whether the same manures in the same proportions yield the same temperatures with different species, or whether the temperature, however derived, which is best to bring one species of plants to perfection is the best for other varieties of that species.

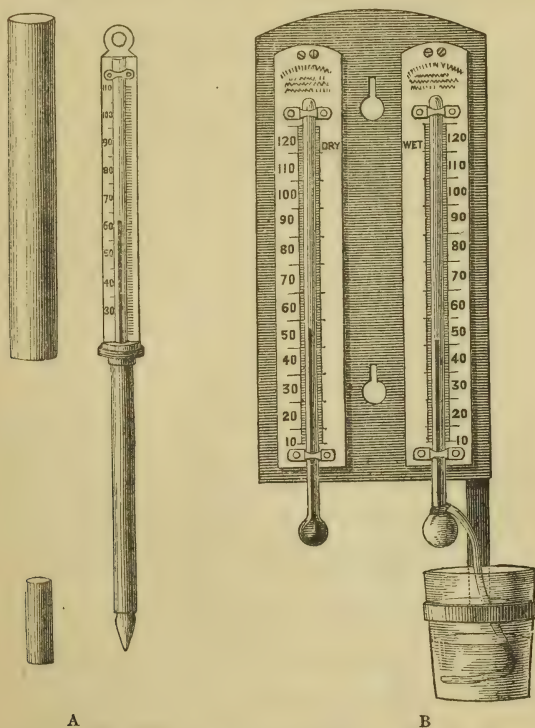
This instrument has been submitted to the Scientific Committee of the Royal Horticultural Society, under whose auspices, in connection with myself, it will be made.

VI. On a Dry and Wet Bulb Thermometer. By JAMES GLAISHER,
F.R.S.

[Read June 26, 1872.]

AN exact knowledge of the state of the humidity of the air is as important as that of its temperature, in all closed buildings used for horticultural purposes. When plants are imported from other climates, their more or less capability of acquiring maturity is much dependent on the more or less approximation to the climate from which they came, both in its degree of humidity as well as its temperature. By the use of the dry and wet bulb thermometer, both these elements are known, and the one now exhibited (fig. B) is fixed on a metal frame, so that it cannot be injured by water in the greenhouse. I consider that instruments of this class, for this purpose, should be good and inexpensive. The pair of thermometers, as shown, are very nearly without errors at every part of their scales, and could be used for outdoor determinations of temperature and humidity of the air if necessary. Mr. Ackland (Horne and Thornevaite, 123, Newgate Street) has agreed to furnish these instruments thus mounted at 15s. the pair, upon the agreement that he will send them to me for examination before mounting, and sell those only to horticulturists which are furnished with my certificate of their accuracy, and that I am permitted to reject all instruments which may have an error as large as three-tenths of a

degree at any part of their scales. These instruments have been approved by the Royal Horticultural Society.



A, Ground Thermometer—the stem of the instrument should be provided with a circular plate to rest on the soil as stated in the text; B, Wet and Dry Bulb Thermometer.

VII. On *Dracæna* and *Cordylina*. By J. G. BAKER, F.L.S., Assistant Curator of the Kew Herbarium.

[Read June 26, 1872.]

THERE are two genera of arborescent Liliacæ which since the beginning of the century have been distinguished by botanists by universal consent, and which are well-marked from one another both by structural differences and by habit, which seem lately, so far as nomenclature goes, to have drifted into a state of fusion in our collections and trade catalogues in a way that certainly would

be protested against if Lilies were either Ferns or Orchids. The two genera to which I refer are *Dracæna* and *Cordyline*, some members of which everyone knows, and everyone who has a conservatory cultivates. The Dragon Tree of the Canaries is a plant about which everyone has read, and the great Dragon Tree of Orotava, with a trunk 70 feet high and 50 feet in circumference, which has an authenticated history going back to the commencement of the fifteenth century, is a prominent item in every bead-roll of vegetable wonders. Scarcely less celebrated, though of course not known so long in Europe, is the invaluable "Ti" Tree of the Polynesian islanders, *Cordyline terminalis*. Its uses are almost as manifold as those of a Palm. In the Sandwich, Society, and Fiji groups it serves largely for food. The tuberous root, which often weighs from ten to fourteen pounds, after being baked on heated stones, is said to resemble closely stick-liquorice in taste and sweetness. Bruised, mixed with water, and fermented, it forms an intoxicating drink; distilled, an ardent spirit is readily obtained; boiled before fermentation, a rich syrup capable of being used as sugar is the result. The leaves furnish excellent fodder for rabbits, goats, sheep, and cattle, and are used for this purpose by European settlers. It is often grown for the sake of its ornamental leaves; and the stems, stuck into the ground in a row, soon run up into a firm fence for an enclosure. These are the two best and oldest-known members of the two genera. Now as to their botanical distinctions. The structural difference between them is as follows:—In *Dracæna* there is only a single ovule in each of the three cells of the ovary; in *Cordyline* there are a great many—eight to fourteen, say the books. Of course in both there is a tendency for the ovules to become abortive without ripening into seeds; but so far as my experience of the Ti Trees goes, there are never less than two or three seeds in a cell, whilst in the Dragon Trees there cannot be more than one, and frequently one or two out of the three cells become obliterated, as is the rule in the Oak or Horse Chestnut. In *Dracæna* the stigma exists in the form of a head like the button of a fencing-foil, with three little blunt lobes, as in the Lilies. In *Cordyline* it takes the form of three small hooks like the top of a shepherd's crook or the handle of a walking-stick, as in the Fritillaries. So much for differences in the actual structure of the flower; next for habit. In *Cordyline* the flowers are placed singly on the rachis of the panicle, each surrounded by a regular little involucre, formed of the membranous bract that subtends the pedicel on the side farthest from the axis, and inside the pedicel a pair of bracteoles, just like the bract in size

and substance, which are sometimes quite distinct from one another, and sometimes united along their borders. In *Dracæna* the pedicels spring out of the rachis in bundles of two or three, or in some species of many together, without any such regular arrangement of bracts and bracteoles as I have just described. The pedicels in *Dracæna* are usually longer than in *Cordyline*, and the perianth is united through a greater portion of its length, but this does not hold good invariably, and in the shape of the leaves there is very much the same range of variation in both. Dr. Regel adds that *Dracæna* may be distinguished also by its orange-coloured roots and by the absence of runners, but these latter are present in the African *D. surculosa*. The number of ovules and seeds, the shape of the stigmas, and the arrangement of the pedicels and bracts are the points on which it is safe to rely, and the two genera were separated by Jussieu when he laid the foundations of the Natural System in 1789, and have been adopted by Robert Brown, Endlicher, Meisner, Kunth, Dr. Hooker, and all other writers who have had occasion to deal with them.

The geographical distribution of the two genera is not dissimilar. They are both spread through Tropical Asia and North Australia, and are both entirely absent from Europe and America; but whilst there are several species of *Dracæna* in Tropical Africa there are no *Cordylines*, and the latter, on the contrary, stretches into New Zealand and Polynesia, where *Dracæna* does not reach. An excellent monograph of all the known species of *Dracæna* has lately been published by Dr. Regel in the "Gartenflora," and there is an account by Dr. Hooker of the New Zealand and Australian *Cordylines* in the volume of the "Gardener's Chronicle" for 1860, and two later descriptive lists of all the known species and forms have been published by Dr. Karl Koch in the Berlin "Wochenschrift."

I will conclude with a list of forms of *Cordyline* which within the last few years have been placed in circulation in horticulture as species of *Dracæna*. None of them, so far as I know, have been botanically described, and we shall probably not be far wrong in assuming that most of the names in the following list represent mere forms of *Cordyline terminalis*, varying in the shape, size, and colouring of the leaf. I need scarcely point out that the distribution of slight varieties of an old well-known plant under new specific names appended to a genus to which they do not belong has a great tendency to cause confusion in the minds both of gardeners and botanists; and I hope that in this particular case the Horticultural

Society will, for the future, guard against the continuance of the practice.

<i>Dracæna albicans.</i>	<i>Dracæna limbata.</i>
„ <i>amabilis.</i>	„ <i>longifolia.</i>
„ <i>angusta.</i>	„ <i>Macleayi.</i>
„ <i>Chelsoni.</i>	„ <i>Mooreana.</i>
„ <i>Cooperi.</i>	„ <i>nigrescens.</i>
„ <i>concinna.</i>	„ <i>nigrorubra.</i>
„ <i>Dennisonii.</i>	„ <i>magnifica.</i>
„ <i>gracilis.</i>	„ <i>pendula.</i>
„ <i>grandis.</i>	„ <i>pulchella.</i>
„ <i>Guilfoylei.</i>	„ <i>Wisemanni.</i>

VIII. Do Flies Eat Pollen? BY ALFRED W. BENNETT, M.A.,
B.Sc., F.L.S.

[Read December 7, 1872.]

AT a meeting of the Scientific Committee during the past season, the question was raised whether Diptera eat pollen, or whether they merely carry it away accidentally when searching for the nectar which is their ordinary food. Having ventured to express the opinion that certain Diptera, and especially some of the Syrphidæ, do feed upon pollen, I found this was not the view of the entomologists present, who expressed disbelief that insects provided only with a proboscis and no mandibles could obtain any food more solid than the juices of plants. In order to decide the question I this autumn captured a number of the Syrphidæ which on a sunny day swarm on the Compositæ bed at the Regent's Park Botanic Gardens, and subjected the contents of their abdomen to examination under the microscope, when I found them in several instances to contain considerable quantities, and in one to be absolutely loaded with pollen-grains, which were easily recognised as belonging to some Compositous plant, probably some one of the species of *Aster* then abundantly in flower. The flies examined belonged to two species of very different size—*Eristalis tenax* and *Syrphus clypeata*.

The exact mode in which flies use their proboscis in feeding upon pollen—although apparently unknown to English entomologists—has in fact been accurately described by Dr. Erm. Müller, of Lippstadt, in a discourse delivered to the General Assembly of the

Natur-historischen Verein für Rheinland und Westphalen in 1869* :—

"As to flies, it has been till now generally admitted that they are exclusively destined to fluid nutriment. But in the summer of 1867 I was somewhat surprised, while observing in my garden an *Eristalis tenax* upon a flower of *Oenothera media*, to discover that it was eating the pollen. Resting upon its middle and hind legs, it thrust out its fleshy proboscis like an arm, seized a morsel of pollen with the two valves which terminate the proboscis, and tore it away from the anther. Since the pollen-grains of *Oenothera* are tied together by elastic threads, that bit of pollen torn from the anther was attached to others by a band of threads, and the insect, in order to free its mouth from that inconvenient appendage, began to use its fore-legs. Raising both together towards its mouth, it seized between them the cordon of threads, and rapidly rubbing them one against the other, much as we do in washing our hands, succeeded in cutting the threads, and clearing them from its mouth and legs. Then it raised them again and seized the two valves of the proboscis, thoroughly cleaning them of pollen and the threads yet adhering to it; and in about three seconds the work of cleaning was complete. At the same time the valves of the proboscis, by rubbing against each other, had masticated the morsel of pollen, and had conveyed the single granules into the channel of the labium, whence they were pushed into the mouth. It had hardly finished cleaning its proboscis and eating the first mouthful of pollen, when it seized another portion, and repeated each and all the operations I have described. It was so intent upon its meal that I was able to observe it in the closest proximity without its manifesting the slightest fear.

"The quantity of pollen which an *Eristalis* can devour in this way is surprising. Upon making a section of one and examining the stomach, it appeared very large, and was full of a yellow substance which consisted of hundreds of thousands of pollen-grains. I have had since then many opportunities of observing the eating of pollen, not only in all the species of *Eristalis*, but also in the genera *Rhingia*, *Syrphus*, *Volucella*, and *Scatophaga*. This chewing of pollen alternates with sucking honey if the flowers have any, and I am of opinion that the singular structure of the proboscis of flies cannot be fully explained without taking into account its double function of sucking honey and eating pollen. In the Tipu-

* "American Naturalist," July, 1871, p. 290.

lariae, and also in those flies which do not eat pollen but live exclusively upon juices, for instance *Bombylius*, the two valves of the proboscis serve no other purpose than to protect and guide the sucking tubes; but in the flies which devour pollen, besides this function, there is also that of grinding the pollen, for which they have special adaptations, for the margins of the two valves at the point of union are transversely dentate with fine parallel bands of chitine. Probably the greater or less distance of these bands in different species is related to the different size of the pollen upon which they feed."

[Additional note, March 10, 1873.]

The subject has also recently been investigated by the well-known naturalist, Mr. Edward Newman, whose conclusions on this point are equally at variance with those of the majority of his brother-entomologists. He asserts unhesitatingly ("Entomologist" for Jan., 1873, p. 291, and for March, p. 336) that the ordinary food of *Eristalis*, as well as of many other Diptera, is pollen; "Masses of this and other solid substances being found in their stomachs undissolved and unaltered after passing through the entire length of the leathery and extensile promuscsis." Whether, however, the pollen-grains are entirely unaltered, or whether their liquid contents or "fovilla" is extracted for the nourishment of the insect, is a point which cannot at present be considered as decided, and which must form the subject of a future series of observations.

In a recent communication to the "Field," Mr. Newman thus describes the process, as observed by him, by which the Syrphidæ detach and devour the pollen of plants, which it is interesting to compare with the independent observations of Prof. Müller:—" *Eristalis tenax*, *pertinax*, and *sequax* are all greedy devourers of pollen, and all of them devour it in the same manner. They thrust their proboscis among the florets, separate the two spreading valves with which its extremity is furnished, grasp a cluster of pollen-granules, detach them from the flower, and swallow them. The operation of detaching the pollen-granules is not performed without some skill and exercise of ingenuity, for in many flowers the granules are united together by slender tenacious threads, which must be broken before the granules can be swallowed. This swallowing of the pollen is very obvious to the patient observer; the granules, a few at a time, ascend the leathery proboscis and thence descend into the stomach, which becomes gorged with them, and from which they may be extracted, after the insect is killed, in

a perfectly unaltered state. The yellow pollen-granules frequently impart their colour to the abdomen, more especially to its sides and under-surface. After the fly has swallowed a granule or mass of granules, it occupies several seconds in clearing its head from the granules, threads, and other impurities which still adhere to it—a process performed by its first pair of legs in a manner that strongly reminds one of a cat washing its face with its fore-paws.” Mr. Newman even goes so far as to suggest—though he does not assert this to be the case—whether these three species of *Eristalis* are not entirely destitute of the power usually attributed to them of imbibing the liquid honey of flowers. At all events, in a series of observations extending over two autumns, he has never detected them in the act.

The utility of this affection for pollen on the part of these very common and widely-distributed species of Diptera, in promoting the cross-fertilisation rather than the self-fertilisation of the flowers they frequent, is sufficiently obvious.

IX. Report of the Chiswick Board of Direction.

[Presented February 11, 1873.]

DURING the past season the work at Chiswick has been mainly directed towards the perfecting of the arrangements attendant on the alterations in the garden in the previous year. It was then reported that in consequence of timely, though not unusually copious rainfall, the valuable collection of fruit-trees had been removed with scarcely any loss. The late gloomy and rainy season was peculiarly favourable to the complete establishment of the transplanted stock, the deficiency of fruit being highly conducive to the same end.

Though there has been little opportunity for what may be more strictly considered as scientific investigation, important trials in a horticultural point of view have been carried on with respect to various objects of cultivation. Those on the different varieties of Kales and Peas were made under unusually favourable conditions. Both were very carefully examined, the latter including upwards of 200 reputed varieties, by the Fruit Committee, and the results in either case are recorded in the numbers of the Society's Journal recently published. In order that no dissatisfaction might arise as to

results, each sample was marked with a number, the name of the contributor being kept back, and as the decisions were almost, if not quite unanimous they may be regarded as conclusive. To eleven of the newest the Committee awarded First-class Certificates. Amongst the most remarkable of the varieties in the trial were a large number raised from crosses effected by Mr. Laxton, of Stamford.

The weather was not equally favourable to trials with flowers, a worse season for Pelargoniums being scarcely conceivable. 400 varieties of Zonal Pelargoniums were planted out. The more delicate varieties made no growth, and even the coarser ones did not develop fully their respective merits. Of Phloxes 260 varieties, and of Penstemons 100 varieties were also grown in the flower-beds of the new trial ground, while of Fuchsias 100 varieties were grown in pots. These last indeed were not subject to the continued rain, but they suffered like the other occupants of the conservatories from the continued absence of sunlight. The Floral Committee held three meetings at Chiswick for the examination of these collections, and awarded 41 Certificates to Pelargoniums, 28 to Phloxes, 21 to Penstemons, and 26 to Fuchsias. Reports on these collections are published in the last numbers of the Society's Journal.

During the past year a large collection of Peaches, Nectarines, Apricots, and Cherries has been procured and planted against the new boundary walls, for the purpose of comparison and determination of the varieties. These have all been trained in the form of single oblique cordons, so as to economise space and to secure as great a number as possible against the walls.

Owing to the late spring frosts, which caused such havoc among the fruit crops in the country generally, all out-door fruits, with the exception of Strawberries, were unusually scarce in the garden.

The large Orchard House continues very attractive. The trees during the past season were laden with fine highly-developed fruit, and were a subject of study to many of the Fellows of the Society.

The Vines in the large conservatory exhibited last year indications of languor, through defective root action. This is doubtless attributable to the borders having become exhausted; these having been renewed, a more vigorous growth and greater production of fruit may be expected next season.

A new plantation of Strawberries has been lately completed.

The trial during the next season, for which preparations are being made, will embrace all the varieties of Potatoes which it is possible to collect.

Great pains have been taken to get together a collection of such interesting hardy Herbaceous plants as may be worthy of general cultivation. It is not within the province of the Society to attempt anything like a Botanical collection; but within certain limits the Board are anxious to do something towards restoring a general taste for beautiful forms other than those gorgeous masses of colour which have become so prevalent, and which at one time, except for the concomitant attraction of Ferns, bade fair to exclude from gardens everything except a few favoured bedding plants, which were repeated universally, with scarcely any variation.

It is desired during the coming season to get together more especially a collection of all the cultivated Asters which can be met with, with a view to a revision of the nomenclature, which appears to be in a very confused state. Any contributions from Fellows for this object will be thankfully received by the Gardener-in-Chief.

The re-establishment of the system of meteorological observations has not been effected without difficulty. The fine set of new instruments purchased by the Society from Messrs. Negretti and Zambra were personally conveyed to the Kew Observatory by Prof. Thiselton Dyer. Having been satisfactorily tested, they have been fixed in their proper positions at Chiswick, and the observations have been regularly taken with them since the beginning of July. The thermometer-stand, however, which was made at considerable expense at the recommendation of Mr. Glaisher, does not prove wholly satisfactory, and it may ultimately prove necessary to abandon it for some other arrangement.

It will be seen from the following figures that the rainfall at Chiswick of the last six months of 1872 was equal to about two-thirds of the average rainfall of the whole year (23·5 in.) :—

			Number of Days on which Rain fell in 1872.		Rainfall, 1872.		Average Rainfall of 44 years.
July	..	..	14	..	1·94	..	2·32
August	..	..	13	..	1·88	..	2·41
September	..	..	11	..	1·19	..	2·50
October	..	..	24	..	4·65	..	2·63
November	..	..	22	..	3·25	..	2·10
December	..	..	22	..	3·94	..	1·53
			<hr/>		<hr/>		<hr/>
			106	..	16·85	..	13·49

In the period 1826—1869 the whole rainfall of the driest year (1858) was 15·8 in.; in 1864 the whole rainfall was only 16·9 in.

Prof. Thiselton Dyer has commenced some evening lectures on the Scientific Principles of Horticulture to the persons employed in the garden. These lectures are still in course of delivery.

It is hoped during the present year to make some progress with the formation of a herbarium of correctly-named specimens of cultivated Herbaceous plants. This will be exceedingly useful for purposes of reference, especially for naming the living collection.

A very important collection of the seeds of Cotton plants supplied by Major Trevor Clarke was raised at Chiswick for the International Exhibition, of which it proved to be one of the most interesting and attractive features during a great portion of the period the Exhibition was open to the public.

Experiments are about to be made on the practical manurial value of the various products of Major-General Scott's system of sewage precipitation.

The conservatory at South Kensington has been maintained in an exceedingly gay condition throughout the season by means of 14,200 ornamental plants cultivated at Chiswick for that purpose; while the exterior gardens at South Kensington have been embellished by 52,000 bedding plants from the same source.

During the year about 9000 flowering plants; 16,000 cuttings of flowering plants; 1200 packets of cuttings of Apples, Pears, Plums, Cherries, Vines, and Figs; 3000 Strawberry plants; 60,000 packets of flower seeds; and 60,000 packets of vegetable seeds, have been distributed amongst the Fellows by ballot or otherwise. Large collections of cuttings of fruit-trees have been sent to Australia, Canada, Natal, New Zealand, and India.

Presentations of plants, seeds, &c., have been received from amongst others: The Royal Gardens, Kew; Dr. Denny; Major Clarke; Messrs. Veitch and Sons; W. Bull; Knight; F. and A. Smith; Downie, Laird and Laing; T. Laxton; Van Houtte; R. Parker; H. Cannell; D. Paul; E. G. Henderson and Son; George; Gibson; Quilter; Moore; Barron, &c.

The presentations of Peas for trial were made by Messrs. Minier, Nash, and Nash; James Carter and Co.; Sutton and Sons; Veitch and Sons; Hurst and Son; Gibbs and Co.; Wrench and Son; Howcroft and Watkins; T. Laxton; Dean; Williams; Cutbush; James Clarke; Barr and Sugden; James Dickson and Sons; F. and A. Dickson and Son; Finney, Nutting and Son; Hooper and Co.; &c.

M. J. BERKELEY.

R. HOGG.

T. MOORE.

W. T. THISELTON DYER.

X. Report of the Professor of Botany.

[Presented February 11, 1873.]

DURING the past year I have endeavoured, as far as possible, to carry out regularly the duties assigned to the Professor of Botany in the last Report of the Council.

In the months of April, May, and June I delivered a course of six lectures on "Flowers and Fruits." The average attendance at each lecture was about fifty persons. I may perhaps be permitted to remark that it would add considerably to the comfort of the audience if, on future occasions, access could be obtained to the offices without the necessity of traversing the Council-room while the lecture is proceeding. I have to thank Messrs. Veitch for the loan of numerous plants for purposes of illustration, besides those which I obtained from the Society's own gardens.

During the Birmingham Show a Horticultural Congress was held on the afternoons of the 26th and 27th of June. Introductory addresses were delivered by myself and Mr. Moore, and ten papers were read. The want of time for adequate discussion was, however, felt to be a great drawback to the practical usefulness of the meetings. It appears to me very desirable that, if held at all, the Congress should continue to be under the auspices of the Society, but I am inclined to think that it would be better to confine it to a single evening meeting, at which one or two subjects only should be taken up.

The Journal of the Society will for the future be published quarterly, under the joint editorship of the Rev. M. J. Berkeley and myself. Each number will contain, in addition to other matter connected with the scientific work of the society, a brief *résumé* of the Chiswick meteorological observations, with respect to which further information will be found in the Report of the Board of Direction. In exchange for the Chiswick meteorological observations the Director of the Meteorological Office has regularly sent to the Society the daily charts placed in the Council-room.

At the commencement of April the Council placed the charge of the Lindley Library in my hands. Having to a considerable extent re-arranged the books, I was able to suggest to the trustees the sale of seventy-six volumes which were either duplicates or unconnected with botanical or horticultural subjects. During the past year 108 volumes have been added, and seventy-nine volumes bound. Access to this library I have found of the greatest possible

importance in the performance of my official work, more especially on the show days.

On the 18th of July I despatched to the Jardin des Plantes a collection of forty-two species of Orchids from the Society's collection. These, together with a collection from W. Marshall, Esq., reached Paris in good condition, and during the summer I had the satisfaction of personally seeing the appreciation in which they were held. Besides engaging in a considerable and increasing correspondence, I have determined the names of 189 plants sent to me for that purpose.

There is one point which I wish in conclusion to take this opportunity of more especially urging. I am strongly impressed with the inequality in value of the certificates awarded by the Floral Committee. It appears to me that the enterprise and expense of introducing an important new plant into the country is ordinarily far greater than that involved in producing a new florist's variety of an old established species. I think, therefore, that the two classes of cultivated plants should receive different forms of certificate. The number of First-class varieties of the Dahlia, for example, is endless. The result must be, I cannot but think, to reduce the value of the First-class Certificate. At any rate it must make such a distinction appear inadequate when a new plant of the importance of say *Phalenopsis Schilleriana* makes its appearance for the first time at the Society.

W. T. THISELTON DYER.

XI. On *Pteris serrulato-tremula*. By THOMAS MOORE, F.L.S.,
Floral Director to the Royal Horticultural Society.

THIS very interesting greenhouse evergreen Fern, of which a figure representing the upper portion of a frond forms Plate V., sprang up about a couple of years since in one of the propagating-houses at the Chiswick garden, and is believed to be a hybrid between two well-known species, *Pteris serrulata* and *P. tremula*, which are very largely grown there for decorative purposes, on account of their free-growing and elegant character. In the earlier stages of development the fronds were so closely like those of *P. serrulata* that the plant was looked upon as a slight variation of

that species; but the successive fronds gradually changed in character until they showed a near resemblance to *P. tremula*, differing mainly in the more elongated outline of the frond. In the intermediate stages the fronds assumed a more intermediate character.

The habit of the plant is elegantly spreading, the erecto-patent fronds being upwards of $2\frac{1}{2}$ feet in height, including a stipe of 6 or 8 inches, the outline of the leafy portion being elongate-triangular, with a tendency to furcation in the rachides and at the tips of the pinnæ. The stipes are pale chestnut brown, as in *P. tremula*, and the fronds have the same palish green colour which occurs in that species, from which this novelty differs in its narrower fronds, and the numerous elongated caudate apices which occur both on the pinnæ and on the more compound of the pinnules, and are often as much as 3 inches long. The following description embodies its chief peculiarities:—

Fronds tripinnate (in the few lower pinnæ), $2\frac{1}{2}$ —3 feet high, elongate-deltoid, pale green; lower pinnæ triangular, bipinnate, the segments pinnatifid at the base and terminating in a long caudate apex, the intermediate pinnules sessile, pinnatifid at the base with linear-oblong segments and a caudate terminal one, the apex pinnatifid with linear-oblong decurrent lobes and a terminal caudate one; upper pinnæ less compound, but caudate, and having the basal pinnules also caudate, the uppermost merging into linear pinnatifid or linear entire segments, the apex being caudate; sori continuous, with linear entire indusia; veins once or twice forked, free; stipes and rachis chestnut brown, furrowed in front, smooth and glossy.

XII. A Classified Synonymic List of all the Known Lilies, with their Native Countries, and References to the Works where they are Figured. By J. G. BAKER, F.L.S., Assistant Curator of the Kew Herbarium.

SUBGENUS 1. EULIRION.—Perianth funnel-shaped, horizontal or slightly drooping, its divisions broadest above the middle, spreading only towards the tip when fully expanded; filaments and style nearly straight.

1. *L. cordifolium*, Thunb.

Subspecies 1. CORDIFOLIUM proper.—Japan.

L. cordifolium, Zucc. in Sieb. Fl. Jap., fasc. 3, t. 13, fig. 2, and t. 14; Flore des Serres, t. 216.

Subspecies 2. GIGANTEUM.—Central and Eastern Himalayas, 5-10,000 feet.

L. giganteum, Wall. Tent. Fl. Nep., t. 12, 13; Bot. Mag., t. 4673; Flore des Serres, t. 771-2; Belgique Horticole iii., t. 21.

2. *L. longiflorum*, Thunb.

Subspecies 1. LONGIFLORUM proper.—Japan and China.

L. longiflorum, Bot. Reg., t. 560; Flore des Serres, t. 270; Lodd. Bot. Cab., t. 985; Bury Hexand., t. 8.

Var. 1. EXIMIUM.—Japan.

L. eximium, Court., Spae Mon., p. 14; Flore des Serres, t. 283-4.

L. Jama-juri, Siebold et De Vriese Tuinbow Flora, vol. i., p. 319, t. 11.

L. longiflorum Takesima, Duchartre Obs., p. 38.

L. longiflorum Liu-Kiu, Siebold.

Subspecies 2. NEILGHERRENSE.—Nilghiris.

L. neilgherrense, Wight Icones, t. 2031.

L. tubiflorum, Wight Icones, t. 2033-4.

L. Wallichianum, Wight Icones, t. 2035, not Schultes.

L. neilgherrenicum, Lemaire Ill. Hort. x., t. 353.

L. Metzii, Steudel.

3. *L. Wallichianum*, Schultes fil.—Central Himalayas, 3-4000 feet.

L. Wallichianum, Bot. Mag., t. 4561; Lindl. and Paxt. Fl., Gard. 1850, 120, with a figure; Lemaire Jard. Fleur., t. 105-6; Flore des Serres, t. 612.

L. Batisua, Ham. mss.

L. japonicum, D. Don, not of Thunb.

L. longiflorum, Wall. Tent. Fl. Nep., t. 29, not of Thunb.

4. *L. japonicum*, Thunb.—Japan and Korean Archipelago.

Var. 1. JAPONICUM proper.

L. japonicum, Bot. Mag., t. 1591; Lodd. Bot. Cab., t. 438 Reich. exot., t. 88.

L. odorum, Planch. Flore des Serres, t. 876-7.

Var. 2. BROWNII.—Japan.

L. Brownii, Mielle Flore des Serres, t. 47.

L. japonicum, Bury Hexand., t. 2.

5. **L. nepalense**, *D. Don*.—Temperate Central Himalayas; not now in cultivation.

Var. 1. **NEPALENSE** proper.

L. nepalense, Wall. Pl. Asiat. Rar., t. 291.

- Var.* 2. **TRICEPS**.—Central Himalayas; not known in cultivation.

L. triceps, Klotzsch Reise Wald., t. 93.

- Var.* 3. **NANUM**.—Central Himalayas; not known in cultivation.

L. nanum, Klotzsch.

6. **L. candidum**, *Linn.*

Subspecies 1. **CANDIDUM** proper.—South Europe.

L. candidum, Bot. Mag., t. 278; Redouté Lil., t. 199; Flore des Serres, t. 735; Bury Hexand., t. 38; Reich. Fl. Germ., t. 445.

Var. **STRIATUM**, Hort.

L. striatum, Flore des Serres, t. 735.

Subspecies 2. **PEREGRINUM**.—Never seen in a wild state, and now apparently lost from cultivation, in this country at any rate.

L. peregrinum, Miller; Sweet Brit. Flow. Gard., ser. 2, t. 367; Hayne Arzne. 8, t. 27.

7. **L. Washingtonianum**, *Kellogg*.—California.

L. Washingtonianum, Gard. Chron. 1871, t. 142; Regel Gartenflora, t. 170; Flore des Serres, t. 1975-6.

L. Bartramii, Nuttall Herb.—Gathered and named by Nuttall a generation ago, but his name was never published so far as I am aware.

SUBGENUS 2. ARCHELIRION.—Perianth broadly bell-shaped, horizontal or slightly drooping, its divisions ovate or lanceolate, not distinctly clawed, spreading widely from below the middle when fully expanded; style declinate, and stamens much curved.

8. **L. tigrinum**, *Gawl.*—Japan and China.

L. tigrinum, Bot. Mag., t. 1237; Redouté Lil., t. 395 and 475.

L. speciosum, Andrews Bot. Rep., t. 586, not Thunb.

Var. 1. **FORTUNEI**, Hort.

Var. 2. **SPLENDENS**, Hort.

L. splendens, Flore des Serres, t. 1931-2; Floral Mag., t. 509.

L. tigrinum Leopoldi, Hort.

Var. 3. LISHMANNI, Moore Florist, 1873, p. 13 with figure.

9. *L. speciosum*, *Thunb.*—Japan.

L. speciosum, Bot. Reg., t. 2000; Zucc. in Sieb. Fl. Jap., fasc. 3, t. 12, and t. 13, fig. 1.

L. speciosum, var. *Kämpferi*, Bot. Mag., t. 3785; Flore des Serres, t. 276-7.

L. lanceifolium, Hort., not Thunb.

* Stems purplish-brown.

Var. 1. RUBRUM, *Masters* in Gard Chron. 1872, p. 1522.

Var. 2. ALBUM, *Masters* l.c.

* * Stems green.

Var. 3. SPECIOSUM proper.

Var. 4. ROSEUM, *Masters* l.c.

L. speciosum, Paxt. Mag. v., t. 1.

Var. 5. PUNCTATUM, *Lem.*, Flore des Serres, under t. 276.

L. lanceifolium, Paxt. Mag. viii., t. 267, not Thunb.

Var. 6. TAMETANO, *Zucc.*

L. Broussartii, Morren Mém. Acad. Roy. Brux., Feb., 1834.

L. speciosum vestale, Hort.

L. eximium, Hort.

10. *L. auratum*, *Lindl.*—Japan.

Var. 1. AURATUM, proper.

L. auratum, Bot. Mag., t. 5338; Flore des Serres, t. 1528, 1531; Ill. Hort. ix., t. 338; Revue Hort. 1867, t. 371.

L. Dexteri, Hovey.

Var. 2. WITTEI.

L. Wittei, Suringar in K. Koch Wochen. 1867, p. 294.

SUBGENUS 3. ISOLIRION.—Perianth broadly bell-shaped, quite erect, its divisions oblong-lanceolate, broadest about the middle, spreading in the upper half or third when fully expanded; stamens divergent on all sides from the centre of the flower.

11. *L. philadelphicum*, *Linn.*—Canada and Northern United States.

L. philadelphicum, Bot. Mag., t. 519; Redouté Lil., t. 104

Lodd. Bot. Cab., t. 976; Bot. Reg., t. 594.

L. andinum, Nuttall.

L. umbellatum, Pursh.

12. *L. medeoloides*, *A. Gray.*—Japan; not known in cultivation.

13. *L. Catesbæi*, Walters.—United States.

L. Catesbæi, Bot. Mag., t. 259; Lodd. Bot. Cab., t. 807; Sweet Brit. Flow. Gard., ser. 2., t. 185.

L. spectabile, Salisb. Parad., t. 5., not Link.

L. carolinianum, Catesby, not Michaux.

14. *L. bulbiferum*, Linn.

Subspecies 1. BULBIFERUM proper.—Austria, Sweden.

L. bulbiferum, Jacq. Austr., t. 226; Bot. Mag., t. 36; Redouté Lil., t. 210; Reich. Germ., t. 454; Regel Gartenflora 1872, p. 231, with woodcut of bulb.

Subspecies 2. CROCEUM, Chaix.—France, Switzerland, and North Italy.

L. croceum, Lodd. Cab., t. 784; Reich. Germ., t. 454.

Subspecies 3. DAVURICUM, Gawl.—Through Siberia.

L. davuricum, Regel Gartenflora, t. 740, and 1871, p. 231, with woodcut of bulb.

L. pennsylvanicum, Gawl. Bot. Mag., t. 872.

L. spectabile, Link; Reich. Icon. exot., t. 30; Regel Gartenflora, t. 349.

L. Buschianum, Lodd. Bot. Cab., t. 1628.

Subspecies 4. THUNBERGIANUM, Schultes fil.—Japan.

Var. 1. THUNBERGIANUM proper.

L. Thunbergianum, Lindl. Bot. Reg. 1839, t. 38; Maund Bot., t. 158.

L. aurantiacum, Paxt. Mag., 6., p. 127, with a figure.

Var. 2. BREVIFOLIUM, Baker & Dyer Gard. Chron. 1872, p. 1356.

Var. 3. BICOLOR, Moore Flor. Mag., t. 104.

L. pictum, Hort. Sieb.

L. aurantiacum, Hort. Krelage.

Var. 4. WILSONI, Leichtlin.

L. pardinum, Moore Flor. & Pom. 1861, p. 121, with a plate.

Var. 5. ALUTACEUM, Baker & Dyer l.c.

L. Thunbergianum aureum nigro-maculatum, Flore des Serres, t. 1627.

Var. 6. ARMENIACUM, Baker & Dyer.

Var. 7. CITRINUM, Hort. Wilson.

Var. 8. SANGUINEUM.

L. sanguineum, Bot. Reg., 32, t. 50.

L. biligulatum, Hort.

L. lateritium, Hort.

Var. 9. *ATROSANGUINEUM*, *Baker & Dyer* l.c.

L. hæmatochroum, Lem. Ill. Hort., t. 503.

Var. 10. *FULGENS*.

L. fulgens, Morren Spae Mon., 29; Lemaire Ill. Hort., t. 422.

L. venustum, Kunth Flore des Serres, t. 657.

L. fulgens, var. *staminosum*, Lemaire Ill. Hort., t. 1422, is a double-flowered form.

15. *L. lancifolium*, *Thunb.*—Japan; a very little known plant, never brought into cultivation, perhaps a variety of the last.

L. lancifolium, *Thunb.*, Mem. Acad. St. Petersb., 3, t. 3.

16. *L. pulchellum*, *Fisch & Meyer*.—East Siberia.

L. pulchellum, Regel Gartenf., t. 284, fig. 2; Revue Hort. 1862, p. 131, with a figure.

17. *L. concolor*, *Salisb.*—China and Japan.

Var. 1. *CONCOLOR* proper.—China.

L. concolor, *Salisb. Parad.*, t. 47; Bot. Mag., t. 1165.

Var. 2. *SINICUM*, *Lindl.*—China.

L. sinicum, *Lindl.* in Paxt. Flow. Gard., vol. ii., misc. t. 193; Ill. Hort., t. 100; Flore des Serres, t. 1206; Bot. Mag., t. 6005.

Var. 3. *CORIDION*, *Sieb. & De Vriese*.

L. coridion, *Sieb. & De Vr.* Tuinbow Flora, vol. ii., p. 341, with a figure.

Var. 4. *PARTHENEION*, *Sieb. & De Vriese*.

L. partheneion, *Sieb. & De Vr.* Tuinbow Flora, vol. ii., p. 341, with a figure.

SUBGENUS 4. *MARTAGON*.—Perianth always drooping, broadly bell-shaped, its divisions lanceolate, broadest about the middle, not distinctly clawed, distinctly reflexed when fully expanded; stamens diverging much on all sides from the centre of the flower; and style declinate.

18. *L. Martagon*, *Linn.*—Central and Southern Europe and Siberia.

Var. 1. *MARTAGON* proper.

L. Martagon, Bot. Mag., t. 893 and 1634; Red. Lil., t. 146; Jacq. Austr., t. 351; Engl. Bot., t. 279, 3rd edit., t. 1518; Reich. Ic. Germ., t. 451.

Var. 2. *HIRSUTUM*, *Miller*.

L. Milleri, *Schultes*.

Var. 3. GLABRUM.

L. glabrum, Sprengel.

Var. 4. CATANII.—Dalmatia.

L. Catanii, Visiani Fl. Dalm. Suppl., t. 3.*L. Martagon*, var. *dalmaticum*, Maly.19. *L. maculatum*, Thunb.—Kamschatka, Manchuria, Japan, Russian America.*L. maculatum*, Thunb. Mem. Acad. Peters, 3, t. 5.*L. avenaceum*, Fisch. Maxim. in Regel Gartenfl., t. 485.20. *L. canadense*, Linn.—Canada, Eastern United States, and California.

Var. 1. CANADENSE proper.—Canada and Eastern United States.

L. canadense, Bot. Mag., t. 800 and 858; Bury Hexand., t. 12; Flore des Serres, t. 1174.

Var. 2. PARVUM.—California.

L. parvum, Kellogg Proc. Calif. Acad. ii., p. 179, t. 52; Regel Gartenfl., t. 725.

Var. 3. PUBERULUM, Leichtlin, not Torrey.—California.

Var. 4. WALKERI, Wood.—California.

21. *L. superbum*, Linn.

Var. 1. SUPERBUM proper.—Eastern United States.

L. superbum, Bot. Mag., t. 936; Red. Lil., t. 103; Bury Hexand., t. 36; Flore des Serres, t. 1014-5.

Var. 2. CAROLINIANUM, A. Gray.—Eastern United States.

L. carolinianum, Mich.; Bot. Mag., t. 2280; Bot. Reg., t. 580 (not Catesby).*L. Michauxii*, Poir.*L. Michauxianum*, Schultes fil.*L. autumnale*, Lodd. Bot. Cab., t. 335.

Var. 3. PARDALINUM.—California.

L. pardalinum, Kellogg Proc. Calif. Acad. ii., p. 12, with a figure.

Var. 4. BOURGÆI, Baker.—British Columbia.

22. *L. columbianum*, Hort. Leichtlin.—Oregon and British Columbia.*L. Sayii*, Nuttall mss.*L. canadense*, var. *parviflorum*, Hook.*L. canadense*, var. *minus*, Wood.23. *L. Humboldtii*, Roesl & Leichtlin in Duchartre Obs., p. 105.—California.*L. Humboldtii*, Regel Gartenflora, t. 724; Fl. des Serres, t. 1973-4.

- L. canadense*, var. *puberulum*, Torrey Bot. Whipple, p. 90.
L. Bloomerianum, Kellogg Proc. Calif. Acad. iv., p. 60.
L. californicum, Hort. Angl.
24. **L. Roezlii**, Regel Gartenfl., t. 667.—California, Utah.
L. canadense, var. *Hartwegii*, Baker in Gard. Chron. 1871, p. 321.
25. **L. monadelphum**, *M. Bieb.*—Caucasus and Asia Minor.
 Var. 1. **MONADELPHUM** proper.—Caucasus and Asia Minor.
L. monadelphum, *M. Bieb.* Cent. Ross., t. 4; Bot. Mag., t. 1405; Reich. Exot., t. 89; Regel Gartenfl., t. 733.
L. Loddigesianum, Schultes fil.; Lemaire Jard. Fleur., t. 204; Paxt. Flow. Gard., t. 58; Flore des Serres, t. 507—9.
 Var. 2. **SZOVITSIANUM**.—Asia Minor.
L. Szovitsianum, Fisch. & Lall. Regel Gartenfl., t. 536; Flore des Serres, t. 507—9.
L. colchicum, Steven.
26. **L. carniolicum**, *Bernh.*—Lombardy, Austria, and Turkey.
 Var. 1. **CARNIOLICUM** proper.—Same distribution.
L. carniolicum, Reich. Ic. Germ., t. 990.
L. chalcedonicum, Linn. in part; Jacq. Fl. Austr. Supp., t. 20.
 Var. 2. **ALBANICUM**.—Albania and Transylvania.
L. albanicum, Griseb.
27. **L. ponticum**, *K. Koch.*—Asia Minor; not known in cultivation.
28. **L. polyphyllum**, *Royle.*—Western Himalayas, temperate region; not known in cultivation.
L. punctatum, Jacquemont, Duchartre Obs., p. 77.
29. **L. chalcedonicum**, *Linn.*—Greece, Ionian Islands, Asia Minor.
L. chalcedonicum, Bot. Mag., t. 30; Red Lil., t. 276; Reich. Ic. Germ., t. 453 (not of Jacquin).
30. **L. pyrenaicum**, *Gouan.*—Pyrenees.
L. pyrenaicum, Red. Lil., t. 145; Reich. Ic. Germ., t. 992.
L. flavum, Lam.
31. **L. callosum**, *Sieb. & Zucc.*—Japan and Loo Choo.
L. callosum, *Sieb. & Zucc.* Fl. Jap., t. 41.
32. **L. testaceum**, *Lindl.* Bot. Reg. 1843, t. 11.—A garden hybrid between *candidum* and *chalcedonicum*.
L. testaceum, Paxt. Mag. Bot. 1843, p. 221, with a figure; Flore des Serres, t. 39; Regel Gartenfl., t. 349.
L. excelsum, Hort.

L. isabellinum, Kunze.

33. **L. Leichtlinii**, *Hook. fil.*—Japan.

Var. 1. LEICHTLINII proper.

L. Leichtlinii, Bot. Mag., t. 5673; Ill. Hort., t. 540; Flore des Serres, t. 1736; Belg. Hort. 1869, t. 11; Floral Mag., t. 509.

Var. 2. MAXIMOWICZII.

L. Maximowiczii, Regel Gartenfl., t. 596.

Var. 3. PSEUDO-TIGRINUM.

L. pseudo-tigrinum, Carriere Red. Hort. 1867, p. 410, with a figure; Regel Gartenflora, t. 664.

34. **L. pomponium**, *Linn.*—Lombardy and the South of France.

L. pomponium, Bot. Mag., t. 971; Reich. Ic. Germ., t. 991.

L. angustifolium, Mill.

L. rubrum, Lam.

35. **L. tenuifolium**, *Fisch.*—Siberia.

L. pumilum, Red. Lil., t. 378.

L. linifolium, Hornem.

L. puniceum, Sieb.

The group **NOTHOLIRION**, including *L. roseum*, Wall. (*Thomsonianum*) and *L. Hookeri*, Baker, must rank under *Fritillaria*, not *Lilium*, as it has a slender filiform stigma and tunicated bulbs, and these are the best marks of technical difference between the former and latter genus.

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XIII. Note on *Phylloxera vastatrix*. By Mr. MALCOLM DUNN.

[Mr. Dunn contributed last year (vol. iii., pp. 81—86) an account of the plan he pursued at Powerscourt for extirpating the *Phylloxera*. The following remarks were addressed to a correspondent, and are extracted from "The Gardener" of February last, pp. 63—64.]

I AM very glad to hear that you have decided upon burning all your infected Vines and removing all the borders, and at the same time thoroughly cleansing every part of the houses, making sure that not a vestige of the insidious pest is left. By doing so you will have much more confidence that you have thoroughly stamped it out. Had I to deal with it again I would certainly deal with it in the same way, unless I had very special reasons for cleaning and saving the Vines, though I hope I may never have the task of dealing with it again. One attack from so dreadful a scourge is quite enough in a lifetime. By taking proper means, I have not the slightest doubt but that the very worst infected vineries can be effectually cleansed; for with all my three years' experience of it, I never found that the insect lived more than forty-eight hours when isolated from the Vine. Indeed, in all the numerous experiments I tried in placing it on other plants than the Vine tribe, it never lived forty-eight hours; but on the Vine it prospered and increased with amazing rapidity. I tried it on American varieties, such as Concord, Isabella, Sombruska, and the result was the same. There were Camellias, Azaleas, Cacti, Palms, Fuchsias, Pelargoniums, &c., with various sorts of bedding-plants, in the vineries, and although their foliage in some cases was put amongst the infected Vine-leaves and their roots, in other cases running through their pots into the border amongst the infected Vine-roots, I never found an insect feeding on any plant except the Vine, and only in a very few instances did I find them trespassing on any other plant; and when I did find them, I usually took them to my office and placed them carefully under glasses, where I could watch them, and their life was always cut short within forty-eight hours. I tried to get it established on various vegetables and fruit-trees, but it would not feed nor live on them. There were Figs in the vineries, and the pest never touched them. Consequently my experience coincides with your own that the *Phylloxera* will not deposit its eggs nor live in any other plant but the Vine.

With regard to the eggs, I have kept roots and leaves with eggs and live insects all through the winter; but as soon as the sap of the leaves and roots were exhausted, the eggs became shrivelled and never produced live insects. I took pieces of roots infested

with the insect and placed them in the soil into which clean Vines were potted, and in fourteen days the roots of the pot-Vine were swarming with insects.

Before I became sufficiently cognisant of the habits of the little devourer, the galls quite covered the under sides of hundreds of the young leaves, and the young wood was perfectly riddled with holes or punctures into which they had burrowed, feeding on the sap and depositing their eggs. I could compare their operations on the young wood to nothing but small-pox, so thick did they puncture it. The two following years I did not allow it to get ahead much, for I picked off and burned the infected leaves.

I had the insect nearly as bad in the outside border as inside, but the borders were covered with leaves and strong wooden shutters from September to May, and were consequently comparatively dry and warm. There can be no doubt they thrive best in dry warm quarters, and they could be easily drowned, but the difficulty lies in getting at them. The small roots were eaten up. When lifting the Vines, I never found any larger than a thick quill, and the strong roots were infested up to the collars of the Vines.

XIV. On the Cultivation of the Olive near Ventimiglia. By Mr.

L. WINTER.

[The following information was very kindly obtained by Mr Daniel Hanbury, F.R.S., for transmission to Natal, by a Fellow of the Society. It is also printed in the "Pharmaceutical Journal" for September 7, 1872.]

As you wish for a little information on the propagation of the Olive in this part of Italy, I have drawn up a few remarks which, though not containing much that is new, may yet serve to complete or to confirm your own observations.

The different kinds of Olive-tree we have in this country may be classed under three divisions:—

1. *Olivastro*, the Wild Olive, *Olea europæa*, L., grows quite spontaneous, reproducing itself by seeds and suckers; leaves on young trees small and oblong—on older trees a little larger and lanceolate; branches sometimes spiny; fruit small, oblong, and very bitter. This kind may be regarded as the parent of all the varieties.

2. Varieties reproducing themselves truly by seed, but not so freely as the *Olivaastro*, and having the fruit less bitter. Under this head may be placed the following:—

- α. *Pignuole*.—Branches greyish; leaves lanceolate, acute; fruits when ripe almost round, affording an oil of rather strong flavour. There are hundreds of these trees on the Capo Martino, near Mentone, quite wild.
- β. *Columbàire* (Genoese dialect).—Branches brownish; leaves varying in shape, but mostly obtuse; fruit large, somewhat pointed.
- γ. *Spagnuole*.—Fruit more elongated than the preceding. These forms, α. β. γ., vary more or less *inter se*.

3. Varieties not reproducing themselves truly by seed, but returning to the *Olivaastro*. That these varieties degenerate when propagated by seed is the general assertion among the people here; but regular experiments have never, I think, been carried on, for raising the plant by seed is not advantageous, suckers being of more rapid growth. In this division I would place two varieties, viz.:—

- α. *Nilane*.—Fruit large, oblong. This occurs in abundance as far west as Cannes, whence along the whole French coast of the Mediterranean another Olive with still larger fruit is cultivated
- β. *Punginaïre*.—This is another variety which we have in this country. It has long Willow-like leaves, and produces a very large pointed fruit, chiefly preferred for salting.

The propagation of Olive-trees belonging to this third division is effected by cleft-grafting on the stem of the *Olivaastro* at about six inches above the ground. When the scion has taken, earth is heaped around it, so as to stimulate it to shoot out roots. After three or four years the little tree begins to fruit, and arrived at an age of about twenty to twenty-five years, the roots which have been thrown out by the graft send up suckers, any which come from those of the parent *Olivaastro* being of course extirpated. These suckers, when about two years old, will be strong enough to bear separation from the parent root and to be planted as independent trees. Such young trees fruit in three to five years after planting. When a sucker is thrown out from a large naked root, it may be surrounded by a heap of earth, into which it will strike roots, and in due time may be separated as already explained.

The quality of the oil obtained from the cultivated Olive very

much depends on the degree of maturity of the fruit. The riper the latter the better will be the oil it yields.

Near Marseilles the Olives are gathered in October and November, while they are still unripe, and the oil is consequently of very inferior quality. This plan of anticipating the crop is adopted on account of the cold *mistral*, which spoils the Olives, sometimes completely freezing them and rendering them nearly worthless for oil. To make the trees thicker in foliage, and thus capable of affording a natural shelter to their fruits, the peasants prune the tops every year after the gathering. In this district of Italy comparatively little pruning is needed, the trees on many properties being allowed to grow quite *au naturel*.

About La Mortola and the adjoining district of Latte, as well as on all the lower slopes of the Riviera, the Olives are frequently attacked in the month of July by an insect called *moschino*, which lays its eggs in the berry. The caterpillar develops itself in August, finding its nourishment in the pulp of the fruit. Olives thus infested drop from the trees while not yet fully ripe—that is, in October, November, and December. On the mountains at some distance from the sea, the Olives are scarcely at all affected by these insects; the fruits in consequence attain their perfect maturity, the crop being gathered between December and May. The oil yielded by such Olives is very clear and of superior flavour, and it commands a high price. In proof of this latter fact, I may remark that the value of the oil produced at Latte contrasted with that of the mountain village of San Michele at the head of the valley is ordinarily as three to four, sometimes even as two to three.

XV. Rainfall at Medellin, New Grenada, South America. Lat.

6° 2' N., Longitude 75° 49' W.

Communicated by Mr. WILSON W. SAUNDERS, F.R.S.

As Medellin is a locality from which many plants of horticultural interest have been introduced, the following brief record of its rainfall will not fail to be of some value as an indication of the character of the climate. While rain falls during every month of the year, the months from December to March appear to be the driest season. It is noticeable, however, that July and August had less than half the rainfall in 1871 that they had in 1870.

Months.	Year 1870.		Year 1871.	
	Rain in inches.	Days.	Rain in inches.	Days.
January	...	...	3·64	12
February	...	...	3·64	12
March	...	...	5·04	23
April	...	...	11·58	23
May	10·41	28	8·17	29
June	8·32	21	5·61	18
July	9·06	25	4·21	17
August	10·85	25	4·50	17
September	6·76	19	...	...
October	7·10	23	...	...
November	5·97	22	...	...
December	3·21	13	...	...

Total rainfall during the year 1870, May 1st, to 1871, May 1st, 85·58 inches, which fell on 246 days.

XVI. Meteorological Observations taken at the Royal Horticultural Society's Gardens, Chiswick by W. SPINKS. Reduced by R. STRACHAN, Meteorological Office.

THE readings of the barometers and thermometers are all corrected for instrumental errors (which have been ascertained at the Kew Observatory), and those of the barometer are reduced to the temperature of 32° Fah., and to mean sea-level.

The rain gauge is 25 feet above sea-level.

The temperature of evaporation is regularly observed, but is not given here. It has been considered preferable to give the dew-point, which has been calculated from this observation by means of Glaisher's factors.

The figures denoting the estimated force of the wind signify as follows :—1, light air ; 2, light breeze ; 3, gentle breeze ; 4, moderate breeze ; 5, fresh breeze ; 6, strong breeze ; 7, moderate gale ; 8, fresh gale ; 9, strong gale ; 10, whole gale ; 11, storm ; 12, hurricane.

The notations of weather are, for brevity, expressed by letters which signify as follows :—b, blue sky ; c, detached clouds ; o, overcast ; f, fog ; m, mist ; r, rain ; h, hail ; s, snow ; d, drizzle ; p, passing showers ; q, squalls ; t, thunder ; l, lightning. A letter repeated denotes intensity.

JANUARY, 1873.

Date.	Barometer at 9 a.m.	TEMPERATURE.			WIND.		RAIN in inches.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Min. on grass.		Direction.	Force.	
1	In.									
2	29·824	43·0	38·6	51·0	40·5	35·5	0·10	S	2	b c
3	29·559	47·5	42·2	50·0	41·5	38·0	0·30	SSW	3	o
4	29·757	41·7	48·0	48·0	36·0	33·0	0·06	SSW	6	o
5	29·912	46·5	43·3	50·5	41·0	36·5	0·34	SE	2	o
6	29·798	44·5	40·1	53·0	40·0	36·5	...	SSW	2	b c q
7	30·001	49·5	44·3	49·5	40·0	36·5	0·02	SSW	5	o
8	30·153	42·6	42·2	52·0	45·0	39·0	...	S	2	b c
9	29·861	47·5	42·2	50·5	42·5	37·5	0·09	SSE	3	o
10	29·628	49·3	47·2	52·5	42·0	37·0	0·35	SSE	2	o
11	29·699	48·3	46·2	52·5	48·0	46·0	0·02	S	2	o
12	29·831	49·5	45·5	55·0	46·0	42·0	...	SSW	3	o
13	29·921	49·0	44·8	53·0	47·5	44·5	0·08	WSW	2	b c
14	30·031	50·3	45·2	50·5	42·0	36·0	...	SW	5	o
15	30·205	51·0	47·0	52·5	49·5	48·0	...	SSW	4	o
16	30·074	44·5	43·4	53·0	43·0	38·5	...	SSW	2	b c
17	30·084	49·0	46·0	49·5	43·0	39·0	0·15	SSE	1	o
18	30·030	40·0	37·7	52·5	39·0	34·5	0·06	WNW	2	o
19	28·868	39·5	35·0	47·0	36·0	32·5	0·38	S	3	o
20	28·532	34·0	28·5	52·5	42·5	41·0	0·09	SSW	2	o
21	28·920	32·0	25·4	40·5	29·0	31·5	...	SW	2	c o
22	28·772	39·5	37·2	42·0	31·5	27·5	0·09	WNW	1	b
23	29·533	35·5	33·0	44·5	30·5	27·7	...	SW	2	b c
24	29·440	40·5	38·2	44·5	35·0	29·5	0·12	W	2	o
25	29·938	28·5	28·5	44·0	25·0	24·5	0·02	NNE	2	b c
26	29·942	39·5	35·0	31·0	25·5	25·5	...	NNW	1	f f
27	30·118	30·5	30·5	43·0	26·5	25·5	...	SE	3	c o
28	30·088	31·5	24·0	40·0	29·0	26·0	...	NE	1	f
29	30·092	32·5	26·0	36·0	29·0	28·0	...	SE	1	b c m
30	30·013	35·5	30·3	36·5	32·0	30·0	...	NE	1	o
31	30·038	37·0	32·2	36·0	34·0	33·5	...	SE	2	o
Means	29·758	41·8	38·2	47·1	37·5	34·5	2·27	S 15° W	1·6	—

During January the atmospheric pressure was below the average, the temperature was above the average, and the rainfall in excess of the mean of former years.

FEBRUARY, 1873.

METEOROLOGICAL OBSERVATIONS AT CHISWICK.

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Date.	TEMPERATURE.			WIND.		WEATHER at		
	Barometer at 9 a.m.	Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade Min. on grass.	Direction.	Force.	Rain in Inches.
1	30.112	32.0	25.4	37.5	31.5	SE	4	...
2	29.427	31.0	29.2	34.0	31.0	NE	7	0.40
3	29.609	34.0	31.2	32.0	31.0	NNW	3	...
4	29.924	36.0	35.5	35.0	32.0	NNW	4	0.04
5	30.161	32.0	32.0	38.0	30.5	NNE	1	...
6	30.079	29.0	29.0	36.0	27.5	NNW	1	...
7	30.131	35.5	36.5	38.0	33.5	NNE	3	...
8	30.150	35.5	31.7	42.0	34.0	NNE	3	...
9	30.223	35.0	28.5	37.7	33.5	NNE	2	0.02
10	30.242	34.5	30.6	36.5	32.5	NNE	2	0.06
11	30.417	32.5	32.5	43.0	30.0	N	4	0.02
12	30.063	37.0	32.0	38.0	31.5	N	3	0.01
13	30.239	36.0	31.3	43.5	33.5	NNW	2	...
14	30.283	33.5	30.6	44.5	29.5	NNW	1	...
15	30.444	39.5	32.5	46.0	35.0	NW	2	...
16	30.597	38.5	31.5	46.5	32.0	WNW	2	...
17	30.671	35.0	29.8	41.0	34.0	WNW	2	...
18	30.761	32.5	28.0	32.0	31.5	NNE	1	...
19	30.740	33.5	30.5	35.5	32.5	NW	2	...
20	30.614	31.5	31.5	34.7	28.5	NNE	1	...
21	30.350	30.5	26.5	34.5	30.0	S	2	...
22	29.932	34.5	29.5	34.5	27.5	SW	2	0.09
23	29.907	32.5	26.0	46.0	28.0	NNE	2	...
24	29.810	29.0	29.0	40.0	28.5	NNE	2	0.20
25	29.693	35.5	35.3	31.5	25.5	SE	2	0.72
26	29.943	43.5	37.0	45.0	42.5	S	4	...
27	29.384	41.0	36.5	51.0	40.0	W	4	...
28	29.41	35.0	28.5	44.5	27.0	NNE	2	...
Means	30.131	34.5	30.8	39.2	31.6	N	1.5	1.56

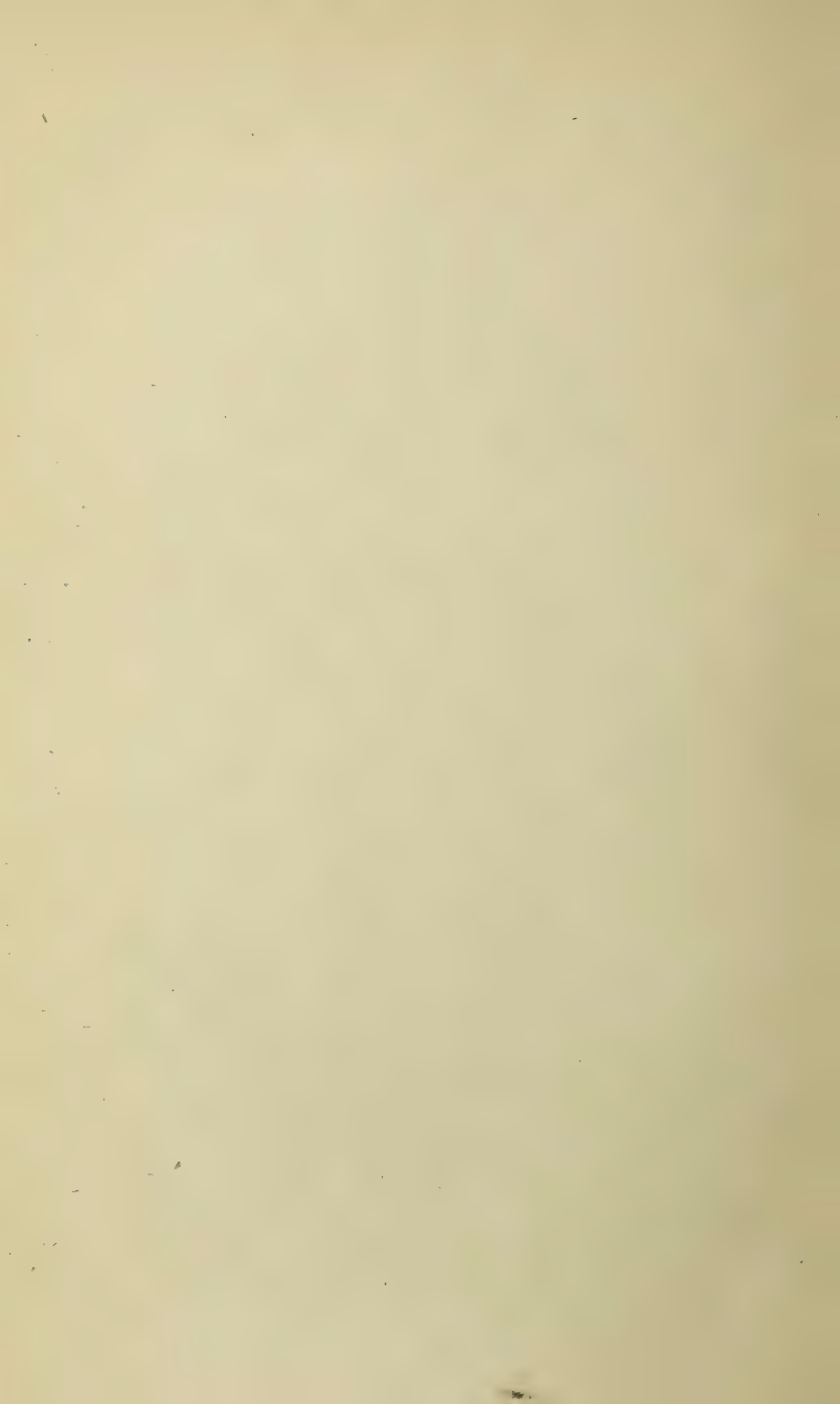
With prevalent North-Easterly winds the barometer has been above its average value for February, the temperature deficient, and the rainfall about the average due.

Date.	Barometer at 9 a.m.	T. MPERATURE.			WIND.		R.AIN in Inches.	W.ATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade. Min.	In shade. Min.	Direction.		9 a.m.	3 p.m.	9 p.m.
	In.									
1	29.427	36.0	33.5	43.5	26.0	SW	0.15	os	or	or
2	29.625	43.0	36.4	44.5	40.0	NW	0.03	c	cd	b
3	29.918	42.5	39.2	50.5	30.0	SSE	0.07	o	or	or
4	29.777	50.0	48.0	46.0	45.0	SSW	0.03	om	o	co
5	29.864	45.5	43.3	58.0	41.5	E	...	or	o	b
6	30.073	39.5	37.2	51.5	30.5	S	0.12	of	o	o
7	29.351	46.5	44.4	48.5	40.0	S	0.01	or	b	b
8	29.682	41.0	36.5	51.0	33.5	SW	...	b	b	b
9	29.730	41.5	34.8	48.0	29.0	SSW	0.26	c	cp	hqr
10	29.442	41.5	37.0	52.0	33.0	SW	0.03	co	op	bc
11	29.212	37.5	36.3	45.5	32.5	SW	0.07	op	or	or
12	29.360	39.5	32.5	50.5	35.0	NNW	0.07	b	o	bc
13	29.546	33.0	31.5	48.0	31.0	N	...	om	bc	bm
14	29.790	41.0	35.3	42.5	31.0	NNE	...	of	of	bm
15	29.886	33.0	31.5	48.0	26.5	NE	0.07	o	o	oq
16	29.819	37.5	35.1	42.5	35.0	NE	0.17	o	or	or
17	29.887	38.5	35.0	39.5	37.0	SSW	...	o	cm	o
18	29.933	40.5	39.4	50.0	36.0	NNE	...	o	o	o
19	29.898	39.0	33.2	48.5	37.5	NE	...	o	c	o
20	29.993	41.0	34.2	43.0	35.0	NNE	0.06	c	hr	c
21	29.945	35.5	34.2	46.5	32.0	NNE	0.07	or	or	b
22	29.962	42.5	42.5	50.0	35.5	NNE	0.01	of	co	bc
23	29.990	43.0	43.0	52.5	30.5	ESE	...	rf	om	bm
24	30.053	43.5	42.4	60.5	32.5	NNE	...	om	om	bc
25	30.170	38.5	36.1	57.5	31.0	NE	...	of	bc	b
26	30.208	40.5	40.5	59.0	33.5	NNE	...	of	cm	b
27	30.083	36.5	36.5	61.5	29.0	NE	0.03	of	cm	bm
28	29.961	48.5	43.3	52.5	40.0	ENE	..	ff	cm	bm
29	30.018	29.961	39.5	63.5	34.5	NNE	...	ff	bc	bc
30	29.997	52.5	42.5	64.5	40.0	ESE	0.28	bc	bc	or
31	29.791	49.0	46.0	64.0	44.5	N	0.04	om	or	bc
Means.	29.819	41.2	38.1	51.1	34.7	NE	1.57	—	—	—

The weather of March may be said to have been seasonable, since the temperature, rainfall, and winds were almost precisely equal to the averages of former years, though the barometer was below its mean value.



Pteris serrulato-tremula.



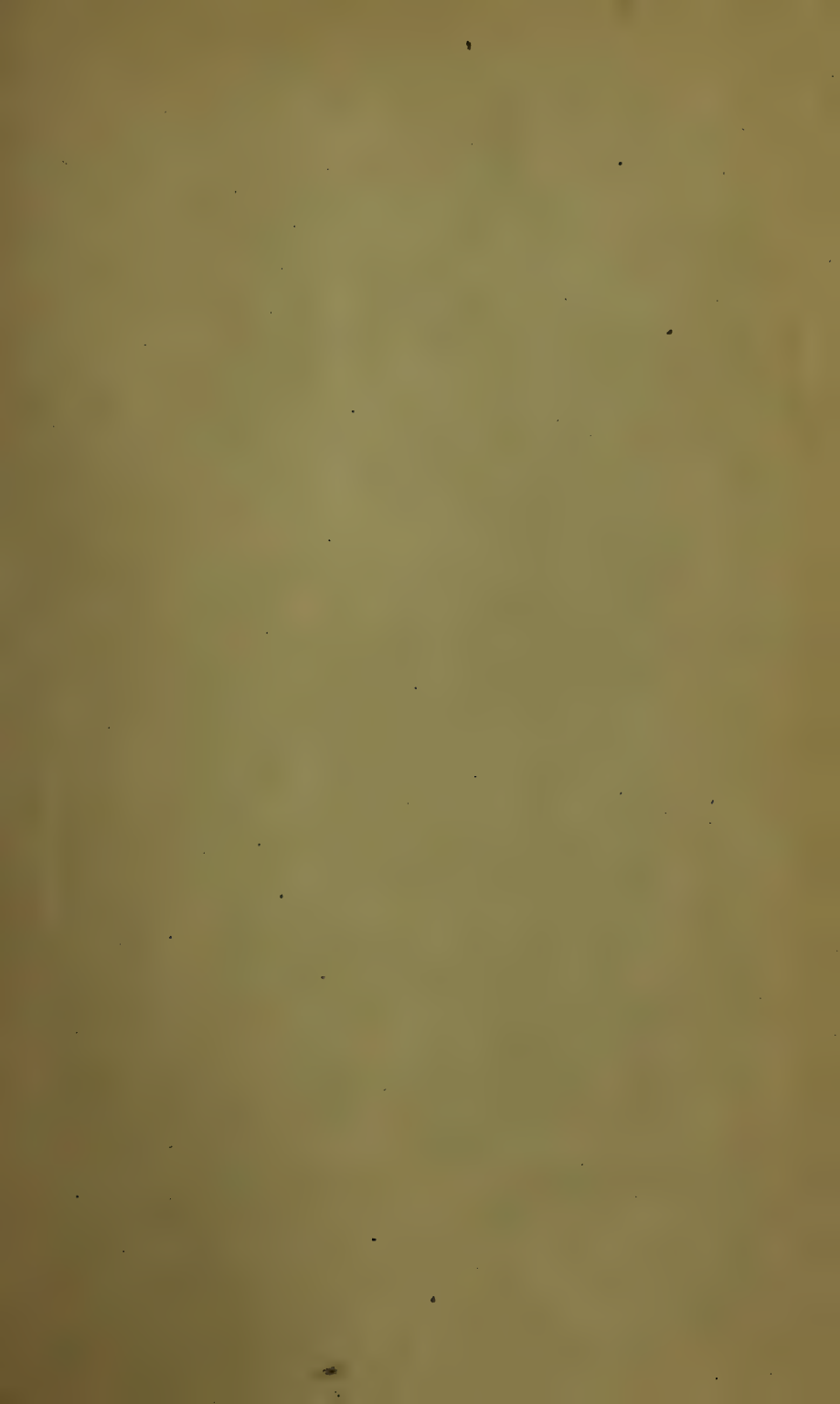


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Fellows and Correspondents of the Society are invited to communicate materials for this Journal, under cover, to the Rev. M. J. Berkeley, Sibbertoft, Market Harborough, or Prof. Thiselton Dyer, Royal Hort. Soc., South Kensington.

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XVII. Report on Plants Grown for Trial at Chiswick, 1873. By
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THE subjects specially examined by the Floral Committee during the summer of 1873, for the purpose of ascertaining the merits of the novelties submitted for trial, were Pelargoniums, Fuchsias, Pentstemons, and Phloxes. The Pelargoniums, with the exception of the salmon-coloured and white varieties (which according to the previous instructions of the Committee were grown in pots), were tried as bedding plants, the Fuchsias as decorative pot-plants, and the Pentstemons and Phloxes as border flowers. As in former Reports the mark *** indicates the highest quality, and the award of these marks is thus regarded as equivalent to that of a First-class Certificate. It should also be explained that the names of persons given in parentheses, after the name of the variety, indicate the donors of the plants, who are not necessarily, or in all cases, the raisers.

PELARGONIUMS AS BEDDING PLANTS.

Golden-variegated Zonals (Golden Tricolors).

Of the older sorts *Amy Richards*, *Louisa Smith*, and *Macbeth* proved to be varieties of first-class merit, and to be the three most distinct of the stronger-growing sorts, whilst *Florence* was the best in the dwarfer group. The following sorts were tried for the first time as bedders :—

Beautiful for Ever (E. G. Henderson) ***. Bright shining foliage, with broad very bright red zone, and very little green ; a very good variety.

Col. Loyd Lindsay (E. G. Henderson) ***. Leaves flat, rounded ; zone bright rosy-red, of moderate breadth, with even golden margin ; moderately vigorous.

Countess of Enniskillen (E. G. Henderson) ***. Leaves large, the centre greyish ; the zone rosy-red, irregularly vandyked, with broad edge of creamy yellow ; habit vigorous.

Madonna (E. G. Henderson) ***. Leaves with broad zone of deep bronzy red, and narrow edge of yellow ; bold and good.

Oriental (E. G. Henderson) ***. Flat foliage, with broad zone of very bright red ; a moderate grower, and very effective.

Peter Grieve (E. G. Henderson) ***. Leaves large, flat, with fiery orange-red zone, and broadish margin of yellow ; telling.

Princess Louise (E. G. Henderson) ***. Leaves large, flat, with medium edge of yellow, and broad zone of orange-red; effective.

Beautiful Star (E. G. Henderson). Leaves broad, flat, with broad zone of deep crimson-red.

Countess of Ashburnham (E. G. Henderson). Leaves large, with rather narrow zone; tolerably effective; strong vigorous habit.

Countess of Flanders (W. Paul). Leaves flat, shining, with narrow golden margin, and very broad and bright-coloured zone; moderate grower; a new variety, and first-rate in quality.

Howarth Aston (E. G. Henderson). Leaves even, with the colours clearly defined; zone broad, very bright red; a really fine variety of moderate growth.

Reindeer (E. G. Henderson). Leaves small, uneven; zone narrow, but bright and telling; moderate grower.

W. E. Gladstone (E. G. Henderson). Leaves broad; very bright zone, tolerably even; a good grower, and effective.

Zodiac variegata (Webster). Strong-growing variety, with bright colours; the zone narrow for the size of the plant.

Many other sorts were received and planted, but being sent in late, they did not make satisfactory growth, and are reserved for another season. The following were discarded as bedding sorts:—*Achievement*, *Allan-a-dale*, *Andalusia*, *Antagonist*, *Carthage*, *Chimborazo*, *Coronet*, *Crown Jewel*, *Defiance*, *Donna Maria*, *Estelle*, *Hong Kong*, *Jetty Lacy*, *Julia*, *Lucretia Borgia*, *Mary Hadwin*, *Miss Batters*, *Mrs. Dunnett*, *Oxonian*, *Queen of Hearts*, *Queen of Tricolors*, *Queen Victoria*, *Ruby King*, *Saragossa*, *Shadow Dance*, *Solfaterre*, *Sparkler*, *Starlight*, *Zodiac variegata*.

Silver-variegated Zonals (Silver Tricolors).

Circassian Beauty (Hodgson) ***. Leaves small, with very bright pink zone; free and good; covers tolerably well, being of close growth.

Fair Rosamond (E. G. Henderson) ***. Leaves well developed, and of good colour.

Lass o' Gowrie (E. G. Henderson) ***. Leaves of medium size, rather crumpled, with very broad and bright zone, and creamy-white edge; very effective.

Fascination (E. G. Henderson). Leaves large, flat, with broad cream-coloured edge, and narrow bright red zone; distinct and good both in habit and quality.

The following varieties of this group were discarded as bedding

plants:—*Baron Ricasoli*, *Caroline Longfield*, *Clorinda*, *Emma Chater*, *Fascination*, *Felicity*, *Landseer*, *Mabel Morris*, *Mayflower*, *Mrs. Masters*, *Miss Burdett-Coutts*, *Miss Farren*, *Mysterious Night*, *Pet of the Flock*, *Startler*.

Silver-margined.

Among the older sorts, *Albion's Cliffs* was considered the best amongst the larger and stronger-growing varieties; and *Flower of Spring* the best of the dwarf compact-growing creamy-edged sorts. *Miss Kingsbury* and *Silver Chain* were also noted as varieties of the first order, the former with cerise-scarlet and the latter with rosy-tinted flowers. The following were grown for the first time:—

Golden Brilliantissima (H. Park) ***. A form of the old *Brilliant*, of compact growth, with the leaves irregularly edged with yellow and creamy-white; flowers very freely produced, of a brilliant orange-scarlet; remarkable for its mixed gold and silver variegation.

Laura (Bland) ***. In the way of *Albion's Cliffs*, but more erect; strong grower and rather coarse; leaves with brownish-red zone and cream-coloured margin; bears large trusses of pale scarlet flowers.

In this group *White Lady* and *Waltham Bride*, both dwarf sorts, were retained for their white flowers; while the following were discarded:—*Alma*, *Brilliant*, *Maitre d'Hotel*, *Mrs. Lenox*, *Mountain of Snow*, *Pearl*, *Princess Alexandra*, *Snowflake*, *Variegated Stella*.

Golden-leaved.

In this section the Committee decided that both *Creed's Seedling* and *Crystal Palace Gem* retained the high character they had already received. The former was subsequently noted as the best of the purely golden-leaved sorts. The *Crystal Palace Gem* is of spreading habit, and its golden-tinted leaves have a central green patch; it is in the way of *Cloth of Gold*, but smoother.

Bronze Zonals.

A very useful group for bedding purposes, but amongst the varieties of which there is necessarily great similarity. Among the good sorts of older date, the Committee specially approved *Maréchal MacMahon* and *Black Douglas*, and *Rev. C. C. Peach* was noted as of strong and rather coarse habit. The novelties included the following:—

Golden Harry Hieover (E. G. Henderson) ***. Dwarf spreading

habit, with small cupped foliage of a bright greenish-yellow, with narrow dark zone; very free and good; flowers pale scarlet. This is very distinct in habit from the ordinary Bronze Zonals, being much less vigorous, and altogether of smaller growth.

Crown Prince (Acton) ***. Leaves even, bright yellow, with broad bright dark-brown zone; small pale scarlet flowers; a favourite with the market florists; habit neat.

Emperor of Brazil (Downie & Co.) ***. Free grower of compact habit; leaves greenish-yellow, with broad dark-brown zone and narrow margin; the leaves are inclined to cup.

Freelight (Carter & Co.) ***. Leaves of moderate size, even, clear yellow, with very broad bright reddish zone, and narrow, even edge; habit very compact; flowers salmon-colour. A really first-class variety.

Mrs. Elliott (Downie & Co.) ***. Leaves yellow, with bright bronzy zone.

Reine Victoria (E. G. Henderson) ***. Leaves large, flat, bright yellow edge of medium width, and broad bright red-brown zone; the marking bold and effective.

The following new and old varieties were discarded from this group:—*Admirable*, *Admiral Englefield*, *Admiration*, *Anthony*, *Beauty*, *Beauty of Wolverstone*, *Bronze Queen*, *Caliban*, *Cleopatra*, *Columbia*, *Columbine*, *Crimson-crown Canary*, *Criterion*, *Dreadnought*, *Earl Ross*, *Earl Rosslyn*, *Gilt wi' Gold*, *High Admiral*, *Inimitable*, *James Richards*, *Jubilee*, *Kentish Hero*, *Lady Fuller*, *L'Africaine*, *Maid of Honour*, *Maid of Kent*, *Master Leonard*, *Mayday*, *Midas*, *Miss Beatrice*, *Mrs. Reid*, *Northern Star*, *Patty*, *Plutus*, *Rev. F. Radclyffe*, *Royalty*, *St. John's Wood Star*, *Sybil*, *W. R. Morris*.

Pink-flowered.

Several new varieties of this section were tried, of which the following were approved:—

Amaranth (Pearson) ***. Free habit; leaves green; flowers deep rosy-pink, almost magenta, medium-sized; large trusses on very long stalks.

Bella (Carter) ***. Leaves green; flowers bright rose-pink, with white blotch on upper petals; very pleasing and effective.

Cleopatra (Barrett) ***. Free spreading habit, and free-flowering; leaves green; flowers bright rose-pink, self-coloured, on long stalks, abundant.

Evans' Seedling (Evans) ***. Dwarf compact habit, with zoned

leaves; in the way of *Welbeck Nosegay*, but of closer and smaller growth; flowers bright rose-pink, with white blotch on upper petals; very free bloomer, and very bright-looking.

Mrs. Haliburton (Bland) ***. Growth free but compact; leaves green; flowers rose-pink, self-coloured; in the way of *Christine*, but an improvement on that fine old sort.

Welbeck Nosegay (Tillery) ***. Compact free-growing habit; leaves dark-zoned, slightly cupped; flowers abundant, large, bright deep rosy-pink, with white blotch on the upper petals; good.

The following were discarded for bedding purposes:—*Bronze-pink Nosegay*, *Cannell's Pink*, *Caroline*, *Christine Nosegay*, *Delight*, *Fried Zehnbauer*, *Master Christine*, *Memnon*, *Mrs. Lowe*, *Penelope*, *Pink Stella*, *Progress*, *Rose Bradwardine*, *Rose Peach*, *Rose Rendatler*, *Surpasse Beauté du Suresnes*, *Surpasse Christine*.

Scarlet and cerise-flowered, &c.

The following varieties were selected for approbation, namely:—*Begere* (Downie & Co.) ***. Habit vigorous; leaves with broad and moderately-dark zone; flowers bright scarlet, in very large trusses; one of the nosegay race.

Chunder Sen (E. G. Henderson) ***. Habit vigorous; leaves lobed, with narrow vandyked zone; flowers very bright orange-scarlet, fine.

Dr. Livingstone (Carter) ***. Of moderately vigorous habit; leaves flat, broad, with a medium zone; flowers very bright scarlet, large, and of fine quality.

Don Giovanni (W. Paul) ***. Of free habit; leaves with broad, darkish zone; flowers scarlet with white eye, of fine form and high quality.

Forest Hill Nosegay (Downie & Co.) ***. A most exquisite variety, of free dwarfish compact habit, with the leaves lobed and faintly zonate; flowers abundant in large trusses, rosy-salmon, paler down the centre of the petals.

Of other sorts which were considered as meritorious, the following deserve to be particularly mentioned:—*Warrior*, *Punch*, *Excellent*, *Vesuvius*, *Jean Sisley*, *Lucius*, *Bayard*, *Soleil*, and *Waltham Seedling*, all well-known varieties, were regarded as standard sorts of their respective colours and habits. A few others which appeared good may be briefly noticed:—

Grand Duke (G. Smith). Of vigorous habit, with faintly-zoned leaves, and flowers of a light scarlet colour.

H. M. Stanley (George). Good.

Mercy Grogan (E. G. Henderson). Of free habit, with the leaves zonate, and the flowers scarlet with a white eye; good.

Mrs. Vincent (Pearson). Good; the flowers of a light crimson.

Richard Dean (E. G. Henderson). Of vigorous growth, with zonate leaves, the flowers large, bright scarlet with white eye, in fine bold trusses.

Sir Thomas More (Denny). A fine variety, with bold, well-formed scarlet flowers.

Stanstead Rival (Downie & Co.). Of moderately vigorous spreading habit, leaves faintly zoned, flowers rich rosy-scarlet.

Wellington (Denny). Good; bold habit, and fine flowers.

The number of high-coloured Bedding Pelargoniums has now become so overwhelming that the Committee was led to give its attention to the expurgation of varieties which in its opinion were not equal to others of similar character. The result of the scrutiny was, that the following sorts were struck out of the list of sorts to be cultivated at Chiswick. It is at the same time to be noted that many good varieties will be found amongst those thus set aside, simply because the lists are overcrowded:—

Acquisition, Alfred, Amabilis, Archbishop of Paris, Ascendant, Atalanta, Beauty of Chesterfield, Boule de Feu.

Caven Fox, Cecilia, Champion Nosegay, Charles Rouillard, Circulator, Claude Lorraine, Claudius, Commissioner, Commodore Nutt, Comtesse de Montfort, Constance Nivelet, Countess of Strathmore, Czarevna.

David Garrick, Deuil de la Lorraine, Diana, Douglas Pearson, Dr. Hogg, Dr. Lindley, Dr. Tait.

Eclipse, Eleanor, Emperor of the French, Enchantress, Etna.

Fairy Queen, Fiery Star, Fred. George.

Géant des Batailles, General, George Peabody, Gorgeous.

Harry George, Hector, Hotspur.

Juno.

King of the Forest, King of the Nosegays.

Lady Derby, Lady Louisa Egerton, Lady Middleton, Lady Palmerston, L'Etincellante, Le Foulet, Le Grand, Le Zouave, Lina Bourtrand, Lord Falkland, Lucifer.

Madame Lousset, Magnet, Maréchal MacMahon, Mdlle. Nilsson, Miss Sanders, Mons. Debut, Mons. Gallaud, Mr. Gladstone, Mrs. Adams, Mrs A. Pirie, Mrs. Eden, Mrs. Goodford, Mrs. Menzies.

Nicholas Boulanger, Nora.

Othello, Overall.

Paquette, Payne's Perpetual, Payne's Pink, President Grey, Pride of Osberton, Progress.

Rainbow, Rev. J. Dix, Robert Bowley, Robinson Crusoe.

Sambo, Sir R. Napier, Sir T. More, Startler, Stella, Sultan, Sydney Turner.

The Champion, Thomas Speed, Troubadour.

Velocipede, Victor, Victor de Puebla, Vulcan.

Waltham Nosegay, William Hill.

Marbled-leaved Zonals (Fancy Zonals).

This group, distinguished by the marbled-green of its leaf-blades, and the pale stripings of its stems and flower-stalks, has received an addition of some merit, namely:—

Kate Creed (Creed). A free blooming variety of good quality, the leaves marked, in addition to the marbling, with a very dark zone varied in hue, and the flowers being of a light reddish-scarlet.

From this group *Hotspur* and *Zodiac* were thrown out.

Ivy-leaved.

About a dozen varieties of this group were bedded out with but partial success. *Peltatum elegans* was very pretty, with deep rosy-lilac flowers of good form. *Duke of Edinburgh* and *Ariosta* were the same or indistinguishable. *Argus* was of vigorous habit, and had dark zoned leaves and rose-coloured flowers. *Dolly Varden* had the golden-green leaves marked with a bronzy zone.

PELARGONIUMS AS POT PLANTS.

It having been found, after several years' experience, that the Pelargoniums of the salmon-coloured class especially, were not adapted for bedding purposes, while they were known to be exceedingly ornamental as pot plants, the Floral Committee decided last year not to grow them and the allied kinds again in the open beds, but to institute a trial under glass. This was accordingly done, and with the results indicated below, the whites and the ocellate varieties—those, that is, with pale colours spotted near the centre or eye—being also included in the trial.

Marks of merit were awarded to but one variety, which proved still more beautiful as a pot plant than it had as a bedder, namely:—

Forest Hill Nosegay (Downie & Co.) ***. Remarkably free in growth, without the least coarseness; leaves lobed and slightly zonate; flowers very freely produced in large trusses, of a bright orange-tinted salmon shading off, the centre of the petals being paler, with a bluish flush; very handsome.

The following annotated sorts were selected as the best of the different shades of colour, the notes being made from the plants as grown under glass. The varieties considered to be the best of the respective shades of colour were selected to be retained in cultivation, and the rest were discarded:—

Salmon-coloured and ocellate sorts.

Belle Esquimoise (Fraser). Very large flowers of fine shape; white with pink centre; extra good.

Dr. Newham (E. G. Henderson). One of the marbled or fancy set; habit spreading; leaves with pale centre; flowers abundant in neat trusses, of good shape, rosy-salmon; good.

Emily Licau (Bull). Leaves with dark zone; flowers in compact trusses, neat, deep orange-tinted salmon; good.

Eugene Mézard (Veitch). Leaves zoned; flowers in compact moderate-sized trusses, salmon-pink with white eye; good.

Gloire de Corbeny (Fraser). Leaves with dark zone; flowers in long-stalked trusses, bright deep orange-salmon, pale at the edge; good.

Hogarth (Bull.) Leaves zoned; flowers in close trusses, of a deep orange-salmon colour; good.

Hortensia (Fraser). Leaves zonate; flowers very freely produced, in large trusses, delicate pink with paler centre, not unlike a *Hydrangea* in appearance; good.

La Fontaine (Low). Leaves zonate; flowers free, in neat trusses, deep salmon-orange; good.

Le Prophet (Fraser). Of dwarfish habit; the leaves zoned; flowers pink with deep salmon eye; good.

Madame Van Houtte (F. & A. Smith). Leaves zonate; flowers veiny blush, with a conspicuous ring of scarlet around the eye; good.

Mons. C. Rouillard (E. G. Henderson). Leaves zonate; flowers flat, in neat trusses, finely-shaped, deep salmon with deeper eye; good.

President Thiers (E. G. Henderson). Leaves zonate; flowers large, in neat trusses, deep orange-salmon; good.

Princess Alice (Downie & Co.). Of dwarf, neat habit; the leaves zoned; flowers white with bright scarlet eye; good.

Polly King (G. Smith). Leaves zonate; flowers large, in large compact trusses, salmon-pink with white eye.

Queen of Beauties (F. & A. Smith). Leaves darkly zonate; flowers large, in large close trusses, blush with deep salmon centre; good.

Remus (W. Paul). Of neat habit, the leaves zonate; flowers in fine compact trusses, of excellent shape, white with salmon eye; very good.

Renown (Bull). Leaves darkly zonate; flowers in good compact trusses, deep orange-salmon; good, better-shaped than *Emily Licau*.

Wilhelmina Weick (W. Paul). Leaves zonate; flowers large, in large bold trusses; blush with pink centre; good.

The discarded sorts in this group, for this purpose, were the following:—*Acme*, *Amelina* *Grisau*, *Baron Haussmann*, *Baron Rothschild*, *Cherub*, *Emblem*, *Emilie Carr*, *Eugenie*, *Harlequin*, *Helene de Nadaillac*, *Jean Valgeans*, *Laxton's Seedling*, *Madame Lemoine*, *Mons. Barre*, *Mons. Rudolph Abbel*, *Miss Louisa Pyne*, *Pandora*, *Princess Mary*, *Rosebud*, *Seraph*, *Stella*, *Vestal*.

White-flowered.

Miss Collingwood (Pearson). One of the marble-leaved or fancy group, and very effective; leaves zonate; flowers large, of good form, blush-white, growing in neat trusses.

Purity (Bull). Leaves zonate; flowers large, pure white; good.

The Bride (Veitch). Leaves zonate; flowers large and freely produced, of a faint blush-white; good.

Virgo Maria (Fraser). Leaves zonate; flowers white; tall growing.

White Clipper (Fraser). Leaves zonate, bright green, with faint zone; flowers large, in good trusses, in the way of *Virgo Maria*, but of better shape, the lower petals being less open; good.

White Princess (E. G. Henderson). Of dwarf habit, with the leaves zonate; flowers in neat compact trusses, pure white.

White Swan (Downie & Co.). Leaves zonate; flowers of good form, on long-stalked trusses, pure white.

The following sorts were discarded as being similar, but inferior to the foregoing:—*E. G. Henderson*, *Madame Martha Vincent*, *White Perfection*.

FUCHSIAS.

Many of the varieties forming the trial collection were received last year, but so late or in so weak a condition that they were not fairly represented at the time the Committee made its examination. They were accordingly grown again this year from young plants, and the following notes may be regarded as supplementary to those published last year (Journ., N.S., vol. iii., p. cx.—cxviii.). The approved varieties are placed first:—

Alpha (G. Smith) ***. Habit free and good, very free-flowering; bright carmine tube and sepals, the tubes short and slender, the sepals very broad and short; corolla of immense size, very double, clear violet; one of the very best.

Avalanche (G. Smith) ***. Habit rather sparse and not very free; tubes small, sepals very short and broad for the size of the flower, light rosy-red; corolla white, exceedingly double and large, and of fine form.

Avalanche (E. G. Henderson) ***. Habit good and free; tube slender, sepals broad, deflexed, scarlet; corolla deep, full, and even, dark violet-purple; a fine bold variety.

Blue Beauty (Jervis) **. Habit good, compact, free-flowering; tube short, sepals broad and short, reflexed, light red; corolla large, very double, clear purple.

Crown Prince of Prussia (Veitch) ***. Habit dwarf and free, and a free bloomer; flowers large, the tube bulged, the sepals broad, scarlet; corolla prominent, dark violet-purple, reddish at the base; good.

Delight (Smith) ***. Habit excellent, and a free bloomer, of first-class merit for decorative or exhibition purposes; tube and sepals clear crimson, the latter sufficiently reflexed; corolla very large, pure white, with a few rosy streaks near the base. A really good variety, the best of its class.

La Favourite (Veitch) ***. Habit first-class; tube and sepals well proportioned, the latter reflexed, scarlet; corolla large and of good substance, well expanded, light violet. A very free-flowering and good variety.

L'Empereur (Cannell) **. Habit dwarf and floriferous; tube and sepals scarlet; corolla single, white.

Lustre (Downie & Co.) **. Not of free habit; flowers with blush recurved sepals, and deep-red compact corolla. Approved for its colour.

Noblesse (Veitch) ***. Habit good and free ; flowers with bright crimson-scarlet tube and sepals, the former slender, the latter spreading ; corolla deep maroon. The darkest-coloured in the collection, and of first-class quality.

Rhoderick Dhu (E. G. Henderson) ***. Habit good ; tube and sepals bright scarlet, the latter well reflexed ; corolla expanded, lavender blue.

Schiller ***. Habit somewhat loose ; flowers large, the tube and broad-spreading sepals white-green at the tip ; corolla clear rosy-purple, with white feather at the base.

Starlight (G. Smith) ***. A fine variety, not sufficiently known. It has the same habit and the same free-flowering character as *Lady Heytesbury*, but the corolla is of a bright crimson lake. It is really a first-class Fuchsia.

Victor (Bull) **. Habit strong and compact ; very bright scarlet tube and sepals, the latter not much reflexed ; corolla of immense size, but coarse and irregular, pale purple, changing to reddish-purple. Not a very desirable Fuchsia.

Wave of Life (Veitch) ***. Habit compact and good ; leaves pale yellow at the points ; tube and sepals bright scarlet, broad and reflexed ; corolla prominent, intense violet, of good substance. A distinct and really good Fuchsia.

Weeping Beauty (Veitch) ***. Habit dwarf, free, and good ; flowers medium-sized, tube rather bulged, sepals broadish, bright crimson-scarlet ; corolla moderately expanded, rich deep purple. A very fine Fuchsia.

White Perfection (E. G. Henderson) ***. Habit good, floriferous, and drooping ; tube and sepals long and narrow, blush-white ; corolla large, lake-crimson and rose.

The following sorts were also included in the collection :—

Alba coccinea (E. G. Henderson). Of bad habit, but pretty ; tube bright red, sepals white tipped with green ; corolla pale rose shaded with lake carmine and crimson ; very distinct and free-flowering.

Albert Memorial (E. G. Henderson). Habit rather straggling, and not very free-flowering ; tube small, sepals broad, short ; corolla large double, but irregular, violet, changing to reddish-violet.

Annie Hoste (F. & A. Smith). Habit compact, free-flowering ; tube small, sepals short and broad, well reflexed, bright scarlet ; corolla very double and large, light violet, heavily streaked and blotched with red.

Aucubæfolia (E. G. Henderson). Habit good; leaves pale green, thickly blotched with white, very distinct; tube and sepals dull red, not reflexed; corolla purplish-red. Really worth growing, but requires to be grown freely to bring out its characters.

Brilliantissima (Downie & Co). In every respect the same as *Lustre*.

Cedo Nulli (Veitch). Free-blooming, and of good habit, but not a very desirable variety; tube small, sepals bright scarlet; corolla violet, soon changing to reddish-violet.

Curiosity (E. G. Henderson). Of good habit, and tolerably free-flowering; tube small, sepals very large, pale red; corolla large but irregular, bright purple shaded at the base with red; foliage pale olive-green, distinct.

Deutscher Kaiser (Downie and Co.). Habit strong, drooping, and straggling; very large bright-red tube and sepals; corolla very large and double, purplish-red; flowers produced in huge bunches.

Dominiana (E. G. Henderson). A vigorous-growing hybrid, now well-known. It is very distinct and handsome, and best adapted for planting out in a cool conservatory.

Emperor of Brazil (Veitch). Habit good, branching, and free-flowering; tube short and small, sepals broad, not reflexed; corolla large, light purple with blotches of rose near the base.

General Changarnier (Lady Parker). Habit very robust, with immense bunches of flowers at the end of the branches; tube and sepals pale rose; corolla bright rose, comparatively small. It stands well in the open ground.

General Werder (Downie and Co.). Habit branching and free-flowering, but not desirable; tube and sepals red; corolla pale violet, thin, and not good.

Golden Mantle (E. G. Henderson). Good yellow foliage.

Golden Treasure (Veitch). Leaves yellow, changing to dull green; worthless as a flowering plant.

George Felton (Veitch). Habit good and exceedingly free-flowering; tube and sepals dull rose, not reflexed; corolla light but dull crimson.

Harry Williams (E. G. Henderson). Habit robust, compact, and free-flowering; tube small, sepals very broad and short, not reflexed, bright shining scarlet; corolla clear light violet with silvery margin; very double and of good form. A variety quite worth growing.

John Fraser (Fraser). Habit compact and very free-flowering; tube and sepals very bright scarlet, broad, horizontal, not reflexed; corolla large, well-formed, very dark violet shaded with black.

Killiecrankie (E. G. Henderson). Habit compact, excellent; tube and sepals bright-red, the former small, the latter large, broad, short, reflexed; corolla very large and smooth, of a beautiful blue; free. One of the best single Fuchsias grown, and the most attractive in the collection.

King of the Fuchsias (E. G. Henderson). A bad grower and not free; flowers fine, but quite superseded by *Killiecrankie*.

Lucy Mills (Veitch). Free-flowering, with the habit of *Fairest of the Fair*; flowers small; tube and sepals blush-white; corolla light lake margined with rose-crimson.

Marguerita (E. G. Henderson). Free-flowering and first-rate in habit; sepals and tube blush-white, the sepals broad and well-reflexed; corolla rather small, bright mauve edged with rosy-lake.

May Queen (F. & A. Smith). The exact counterpart of *Starlight* in every respect, except that the colour of the corolla is a very bright pure lake.

Meteor (Edmonds). Habit very robust; the foliage at the ends of all the branches is of a bright red, rendering the plant very distinct and effective; flowers with bright red tube and sepals, and purplish-red corolla. It is a splendid variety for planting out in a conservatory.

Minnie Banks (E. G. Henderson). Habit good, free-flowering, distinct; tube and sepals white tinged with rose, the sepals short, stout, and reflexed; the corolla clear pale purple; good.

Mrs. Shirley Hibberd (F. & A. Smith). Habit compact and branching; flowers with the tube and sepals white tinged with rose; the corolla a bright lake margined with crimson. Not a desirable Fuchsia.

Pillar of Gold (E. G. Henderson). A small grower, of tolerably good habit; the leaves pale green edged and streaked with yellow; flowers small, with red tube and sepals, and purple corolla.

Princess Beatrice (E. G. Henderson). Habit very compact and robust, and a free-flowerer; tube very short, stout, and, as well as the sepals, blush-white; corolla small, of good shape, light lake margined with rosy vermilion; flowers altogether short and stout.

Queen of Summer (F. & A. Smith). The same in every respect as *Fairest of the Fair*.

Regalia (R. H. S.). Leaves of a bright golden hue with red veins; very distinct, but a weak grower.

Sedan (Downie & Co.). Habit excellent and exceedingly floriferous; tube and sepals very bright scarlet, the latter well proportioned and reflexed; corolla large and of fine form, scarlet-lake. A very showy and first-rate variety.

Symbol (Bull). Habit lanky, bad; tube and sepals bright scarlet; corolla very large and double, creamy-white. A splendid flower, but not of desirable habit.

Sunray (G. Smith). Habit compact and branching; tube and sepals light red; corolla purplish-red; small flowers, not reflexed. A good grower, and distinct in foliage, which is of a light-green colour, variegated with cream-colour and flushed with rose.

Sultan (Veitch). Habit robust, but not desirable, and not a very free-bloomer; tube short and stout, and with the reflexed sepals bright scarlet; corolla light purple, changing early to reddish-purple.

Striata perfecta (Veitch). Very free-flowering, but the corolla is ragged.

Try-me-O (E. G. Henderson). Habit compact and dwarf, exceedingly free-flowering, and a great favourite with growers for market; tube and sepals bright red; corolla bright violet shaded at the base with red.

Triumphant (Veitch). Habit free, good, free-flowering; tube slender, sepals broad and short, turned-up, both pale red; corolla very large, double, shaded with red at the base.

Taglioni (Veitch). Habit good, but not by any means a desirable variety; the stout tube and sepals, which are not reflexed, white stained with rose; the corolla lake margined with crimson.

Vainqueur de Puebla (Veitch). This variety retains its high character as a free-blooming and exceedingly useful decorative plant.

War Eagle (E. G. Henderson). Habit compact, branching, good; tube very short, sepals small, much reflexed, light scarlet; corolla much expanded, bright violet, rather thin; a variety quite worth growing.

Water Nymph (E. G. Henderson). Habit compact, free-flowering,

tube very short and stout, sepals medium size, rosy white; corolla small, bright crimson.

White Eagle (E. G. Henderson). Habit good, but by no means a desirable variety; tubes and sepals large, bright shining crimson, very badly shaped; corolla large, white but not pure, and striped with crimson.

The following is a selection of good and distinct varieties made by Mr. W. Spinks, while foreman at Chiswick and in charge of the plants above described :—

Sepals and tube white, corolla contrasting.

<i>Arabella</i> —free	}	dissimilar.
<i>Lady Heytesbury</i> —free		
<i>Starlight</i> —free		
<i>May Queen</i> —late.		
<i>Minnie Banks</i> —distinct.		
<i>Water Nymph</i> —for colour.		

Sepals and tube scarlet, corolla white.

<i>Delight</i> —largest single and best.	
<i>Conspicua</i> —free good single.	
<i>Puritani</i> —for habit and free-flowering.	
<i>Alexandrina</i> —extra bright tube and sepals.	
<i>Avalanche</i> —double, very large	} not of good habit.
<i>Enchantress</i> —double, free-flowering	

Sepals and tube scarlet, corolla dark.

Killiecrankie—the most perfect form.
Noblesse—the darkest.
Weeping Beauty—dark and very fine.
Wave of Life—distinct in foliage and good.
Sedan—the best-formed red-purple.
Monarch—very large and long, distinct.

PHLOXES.

A considerable collection of these showy summer border flowers was contributed by Messrs. Downie Laird and Laing, Mr. Parker, Messrs. F. and A. Smith, and Messrs. Veitch and Sons; and from amongst these the following, in addition to those reported on last year, were selected as deserving of special notice :—

Carl Klein (F. & A. Smith) ***. Rosy-lilac with crimson eye.

Dame Blanche (E. G. Henderson) ***. White with pale rosy eye, the pips large.

Lady Hulse (Parker) ***. Bright rosy-purple.

Le Lion (Downie & Co.) ***. Lilac with crimson ring around the eye; the later flowers striped and tipped with crimson.

Mons. Taillard (Veitch) ***. Bright rosy-salmon with dark eye; brighter than *Lothair*.

Mons. W. Bull (Downie & Co.) ***. Lilac, with white blotches at the base of each segment forming a radiating white eye.

Roi des Roses (Downie & Co.) ***. Bright rosy crimson with carmine eye.

A. F. Barron (Downie & Co.). Light rose with bold deep crimson eye; fine.

Chanzy (Downie & Co.). Approved last year, and considered equally good this.

Deliverance (Downie & Co.). In the way of *A. F. Barron*, but with smaller crimson eye; good.

Flora McNab (Downie & Co.). Pale rosy-pink with large conspicuous crimson eye; good.

Lothair (Parker). This, which was one of the best of last year's selection, proved equally good on this occasion.

Madame Van Houtte (Downie & Co.). White with large rosy-purple eye; good.

Mr. Forbes (Parker). Pure white; this bloomed well late in the season (September).

Retour de la Fortune (Downie & Co.). Lilac with bold radiate white centre; large and good.

Souvenir des Ternes (Downie & Co.). Blush-white with large rosy-purple spot at the base of the segments; large and good.

PENTSTEMONS.

Some of the varieties of this fine border flower did not come into flower till late in the season, after the visits of the Committee had been made. Most of those here noticed would, no doubt, have received the highest marks of merit had they bloomed sufficiently early to have been brought under notice of the Committee. The few awards made are noted in the earlier part of the subjoined list:—

Agnes Laing (Downie and Co.) ***. Purplish-rose with pure white throat; fine large flowers with very open throat.

- A. St. Clair* (Downie & Co.) ***. Crimson red with dark pencillings at the mouth of the tube.
- Pauline Daurant* (Downie & Co.) ***. Bright rose with the open white throat thickly pencilled.
- Stanstead Rival* (Downie & Co.) ***. Bright carmine crimson with white throat striped faintly with carmine on the lower side; rich carmine crimson externally.
- Aurora* (E. G. Henderson). Deep or purplish rose with white pencilled throat.
- Calliope* (E. G. Henderson). Bright carmine red, heavily pencilled in the throat with the same colour.
- Flora* (E. G. Henderson). Dark rosy-purple tube, with the face of the limb purple; the throat white with prominent crimson bars and lines; fine.
- Germania* (E. G. Henderson). Of dwarf, dense habit, with the flowers open; tube bright red, the face of the limb rosy-red; the mouth white on the upper side, and covered with purplish blotches on the lower side, passing backwards into lines and bars; very fine.
- George Amer* (Downie & Co.). Rich deep crimson purple, the white throat heavily blotched and pencilled with deep blood-red; fine.
- George Mehl* (E. G. Henderson). Light carmine red with white pencilled throat. Large and striking.
- Henri Demay* (E. G. Henderson). Rosy purple; throat pure white, the face of the limb evenly edged with rosy-purple; good.
- La Gloire* (E. G. Henderson). Rosy-red with broad rosy limb; the throat pale, with deep sanguineous-red blotches passing into pencillings at the base; fine.
- Michel Buchner* (Fraser). Deep crimson inside and out; the throat white covered with bars and pencillings of crimson; very large and very fine.
- Mr. Havard* (Fraser). Bright carmine, with very open throat and wide trumpet-mouth; throat white covered with carmine pencillings, the face of the limb pinkish; dwarf, close spikes; very fine.
- Mr. Charles Saunders* (E. G. Henderson). Bright carmine red, the throat heavily pencilled with crimson; large and good.
- Protestation* (E. G. Henderson). Flower short, open-mouthed, with purplish-rose tube, and pale rosy limb, upper part of the

tube white, lower deep maroon crimson passing backwards into pencillings; very striking.

Regalia (Downie & Co.). Purple with clear white throat; effective.

Rose Rendatler (E. G. Henderson). Purplish-rose, the face of the limb paler, the throat covered by the confluent patches of deep sanguineous red; good.

Secrétaire Cazin (E. G. Henderson). Purple, but with the markings and characteristics of *Germania*.

Union (E. G. Henderson). Purplish-rose with open white throat faintly lined; fine.

Victor (Downie & Co.). Rich reddish or pucey purple, rather an open throat, which is white pencilled on the lower side; large and firm.

Zampa (Fraser). Deep crimson both inside and out, the throat covered near the mouth with deep sanguineous blotches; fine.

XVIII. Report on Potatoes Grown in 1873 at Chiswick. By A.

F. BARRON, Gardener-in-Chief, and Secretary to the Fruit Committee.

THE Fruit and Vegetable Committee having decided upon testing the numerous varieties of Potatoes that are in cultivation, and ascertaining their various characteristics, I made application among the growers, and succeeded in obtaining no less than what purported to be 271 distinct varieties. These, with a few exceptions, were planted on the 24th of March, and the sets used were good medium-sized whole tubers, when these could be obtained; but in some instances they were small, and then the produce was much inferior.

The ground was well dug in the autumn of the previous year, but not manured, this having been done for the crop of Peas which had just been removed. The tubers were planted in lines 3 feet apart and 20 inches between each tuber. The plants came up regularly, with a strong growth; and on the 20th of May they were attacked by a strong frost, which cut them very much, some of them being as much as 6 inches above the ground. They soon, however, recovered and grew luxuriantly, being subjected to the usual mode of cultivation, by hoeing and earthing up.

On the 29th of July the disease first made its appearance by attacking the variety called Golden Gem, spreading in a few days with great rapidity to Lapstone, Fortyfold, Red Emperor, nearly all the American kinds, and the Regent class. The haulm of all these sorts was soon destroyed; and of the tubers, those of Regents suffered most severely, about nine-tenths being diseased, and of some kinds, although there was an excellent crop, scarcely a sound tuber remained. There was no variety that was not more or less diseased, those escaping with the least injury being the very early and the very late kinds.

During the growing season the collection was examined five times by the Committee, and the first result arising from the experiment has been to reduce the 271 varieties to 115; and this number may be still further reduced by rejecting those that are inferior and worthless.

The following is a list of donors who furnished the tubers for the experiment:—

Messrs. Bell & Thorpe, Stratford-on-Avon.
Mr. Thomas Benson, Petersham.
Mr. George Biggs, Larkhall, Bath.
Messrs. B. K. Bliss & Sons, New York.
Mr. J. Burpitt, Wandsworth Common.
Messrs. James Carter & Co., High Holborn.
Mr. John Cave, jun., Lincoln.
Mr. F. Dancer, Little Sutton.
Mr. R. Dean, Bedford.
Messrs. Downie Laird & Laing, Forest Hill.
Mr. Robert Fenn, Woodstock.
Mr. H. J. Hardy, Bures, Essex.
Mr. R. Hepplewhite, Chesterfield.
Dr. Hogg, Stillyans, Heathfield.
Messrs. E. H. Krelage & Son, Haarlem.
Thomas Laxton, Esq., Stamford.
Mr. Henry Minchin, Hook Norton.
J. M. P. Montague, Esq., Bridport.
Mr. Thomas Parsons, Acton Green.
Rev. J. D. Peake, Laleham Rectory, Chertsey.
Mr. J. Pritchard, Shrewsbury.
Rev. W. F. Radclyffe, Oakeford Fitzpaine.
Mr. J. Smith, Royal Gardens, Kew.
Mr. George Scrimshaw, Chatsworth.

Messrs. W. Smith & Son, Aberdeen.

Messrs. Sutton & Son, Reading.

Messrs. J. Veitch & Sons, Chelsea.

Messrs. Vilmorin Andrieux & Cie., Paris.

Series I. SKIN WHITE OR STRAW-COLOURED.

§ 1. Long or Kidney-shaped.

1. *Ashleaf Kidney*.

Synonyms.—Marjolin; Oakleaf; Duckstone.

Haulm fleshy, spreading, rarely more than two or three from one tuber, 12 to 18 inches long; stem of a pale green colour; leaflets large, broad, rounded, slightly cupped, bright green, shining. Flowers very rare. Tuber medium-sized, long, tapering, kidney-shaped; eyes full, situate at one end and on big knobby protuberances, giving the tuber an irregular appearance; skin smooth, pale straw-coloured; flesh pale yellow or straw-coloured, firm; quality excellent. Moderate cropper. First early; July and August. This is considered the old or original type.

2. *Kentish Ashleaf Kidney*.

Synonyms.—Veitch's Improved; Cave's Seedling; Cambridgeshire Kidney; Nutbrown; Alma Kidney; Early May; Benson's Seedling; Shepherd's Kidney; Reynard; Nonsuch; Tory; Conqueror; Mona's Pride; Champion; Early Ranelagh; Laing's First Crop; Stillyans Kidney.

Haulm slender, spreading, several stems from one tuber, 12 to 18 inches long; stem having a strong purplish tinge; leaflets small, pointed, green. Flowers very rare. Tuber medium-sized, long, tapering, kidney-shaped, not so much knobbed as the true Ashleaf; eyes full; skin smooth, pale straw-coloured; flesh pale straw-coloured, firm; quality excellent. Excellent cropper. First early; July and August.

3. *Myatt's Ashleaf Kidney*.

Synonyms.—Rivers' Royal Ashleaf; Sandringham Kidney; Myatt's Prolific; Gloucestershire Kidney; Derbyshire Prize Taker; Lee's Hammersmith Kidney.

Haulm and tuber similar to Kentish Ashleaf. Flowers pale lilac, and sparingly fertile. Excellent quality; great cropper.

4. *Advancer* (Bell & Thorpe).

Haulm slender, spreading, 12 to 15 inches long; stem pale green; leaflets small, pointed, pale green. Flowers very rare. Tuber short, flat kidney-shaped; eyes full; skin smooth, pale straw-coloured; flesh pale, firm. Moderate cropper. First early.

5. *Jackson's Improved*.

Haulm similar to Kentish Ashleaf. Tuber medium size, long, tapering, kidney-shaped, slightly knobbed; eyes a little sunken, few and small; skin rough, white; flesh very pure white, firm. Very handsome; excellent cropper. First early; July to September.

6. *Nettle-leaved*.

Synonyms.—À Feuille d'Ortie; Hardy's Improved Albert; Improved Royal Albert; Carter's Champion Forcing; Early Bedford Kidney.

Haulm slender, spreading, $1\frac{1}{2}$ to 2 feet in length; stem with a purplish tinge; leaflets small, much curled, slightly rugose, light green. Tuber medium-sized, very long, tapering, rounded, but sometimes flat, with knobs; eyes full; skin smooth, pale straw-coloured; flesh firm, pale straw-coloured. Good cropper. First early.

7. *Early White Kidney* (Fenn).

Haulm moderately strong, spreading, about $1\frac{1}{2}$ feet in length, similar in character to the Ashleaf, but stronger; stem pale green; leaflets medium-sized, curled, pale shining green. Tuber large, of a rather irregular shape, a little knobbed; eyes full; skin smooth, white; flesh white, firm; quality excellent. Good cropper. First early. *First-class Certificate*.

8. *Alice Fenn* (Fenn).

Haulm and habit of growth very similar to Ashleaf, about $1\frac{1}{2}$ feet in length, spreading, pale green; leaflets small, much curled, showing the under-surface. Tuber of medium size, resembling the

Ashleaf; eyes few; skin smooth, pale straw-coloured; flesh pale straw-coloured, firm. Good cropper. First early. *First-class Certificate*.

9. *Little Gem* (Fenn).

Synonym.—Early Gem.

Foliage and general habit of growth similar to Ashleaf, but stronger and a later grower, and stems lightly tinged with purple, 1 to 1½ feet. Tuber small, rather long but neat kidney-shaped, neat with a few small knobs; eyes full, rather large; skin pale straw, smooth; flesh pale yellow, firm. First early. *First-class Certificate*.

10. *Early Border* (Fenn).

Habit and appearance of Kentish Ashleaf; haulm very slender, about 9 inches in length. Tuber small, short, or half-round kidney; eyes full; skin smooth, pale; flesh pale. Very early; useful for frame work.

11. *Reine de Mai*.

Haulm slender, spreading, 1½ to 2 feet in length; stem pale green; leaflets broad, pointed, green, slightly rugose. Flowers small, white, fertile. Tuber medium size, round kidney shape; eyes small and few; skin smooth, yellowish; flesh pale yellow. Good cropper. Early.

12. *Marjolin Tetard*.

Haulm robust, spreading, resembling Ashleaf, but much stronger, about 18 inches long; stem pale green. Flowers white, fertile. Tuber large, very broad, flat at the crown end, and tapering like a wedge to the stalk end; eyes full but few; skin smooth, dark straw; flesh straw-coloured. Heavy cropper. Early, succeeding the Ashleaf.

13. *Woodstock Kidney*.

Haulm robust, spreading or prostrate, about 2½ feet in length; stems few in number, dark purplish colour; leaflets large, shining, deep green. Flowers white, fertile. Tuber medium size, rather broad, irregular-shaped kidney; eyes few and small; skin rough, dark straw; flesh white, firm. Moderate cropper.

14. *Burpitt's Bountiful* (Burpitt).

Haulm slender, spreading, about 12 inches in length; stem purplish; leaflets small, like the Nettle-leaved, deep green, but much later. Flowers light purple, fertile. Tuber medium size, short, broad, flat; eyes few and small, full; skin smooth, pale straw; flesh white. Fine quality; average cropper. Second early.

15. *Multum in parvo* (Fenn).

Haulm slender, about 12 inches in length; leaflets small; the whole plant much resembling in general appearance a dwarf form of Kentish Ashleaf. Flowers very rare. Tuber small, short, flat, kidney shape; eyes small, about level with surface; skin a little rough, dark straw colour; flesh firm, white. Very small cropper. Very early.

16. *Yorkshire Hybrid* (Taylor's).

Synonym.—Quarantine de la Halle.

Haulm robust, about 2½ feet in length; stem deep green; leaflets broad, rugose, green. Flowers pale, produced abundantly, and followed by berries in great abundance. Tuber large, rounded, long kidney-shaped, tapering somewhat to each end, a little coarse in appearance; eyes large, slightly sunken; skin smooth, pale straw-coloured; flesh pale straw, firm. A moderate cropper. Second early.

17. *New Early Racehorse* (Sutton's).

Very similar to Yorkshire Hybrid, having broader leaflets and growing to little more than half the height. Moderate cropper.

18. *Pioneer* (Bell & Thorpe).

Haulm slender, 12 to 18 inches in length; stem pale green; leaflets abundant, small, rugose, pointed, pale green. Flowers very rare. Tubers medium size, very irregular, kidney-shaped, coarse-looking; eyes numerous, sunken; skin smooth, dark straw; flesh yellow, firm. Throws the tubers out on the surface of the soil. Moderate cropper. First early.

19. *Waterloo Kidney* (Dean).

Haulm slender, 1½ feet in length, somewhat resembling Myatt's

Prolific, but having the leaflets much more crumpled. Berry-bearing. Tubers large, long, tapering, and handsome; eyes a little sunken, rather numerous, situate over nearly three-fourths of the tuber; skin pale straw, smooth; flesh firm, white. Excellent quality. Moderate cropper. Second early.

20. *Dawe's Matchless*.

Synonyms.—Webb's Imperial; Wormsley.

Haulm moderately strong, of somewhat spreading growth, about 2 feet high; stem slightly purple at the base; leaflets of medium size, deep green, and much crumpled or rugose. Flowers small, dirty white, fertile. Tubers large, long, flattened, of regular form; eyes rather numerous, prominently diffused over three parts of the surface; skin pale, smooth; flesh white, firm, fine quality. A very handsome Potato; good cropper. Second early.

21. *Excelsior Kidney* (Dean).

A stronger-growing and much improved form of Dawe's Matchless, producing a larger and finer sample. Extra fine quality. *First-class Certificate*.

22. *Berkshire Kidney*.

Haulm moderately robust, spreading, about $1\frac{1}{2}$ feet long; stem tinged with purple; leaflets broad, pale green, rugose, with rather short petioles. Flowers dirty white, fertile. Tubers medium-sized, flat, kidney-shaped; eyes few, and rather full; skin smooth, pale; flesh straw-coloured, rather close-grained. Light cropper. Second early.

23. *Jaune de Brie*.

Haulm robust, of erect growth, about 2 feet in length; stem pale green; leaflets small, rugose, like the Regent type, pale green. Flowers pale blue, very fertile. Tubers above average size, long, cylindrical, tapering; eyes small, slightly sunken; skin smooth, pale yellow; flesh pale yellow, firm. Moderate cropper. Second early.

24. *Prince of Wales*.

Haulm moderately robust, spreading, and seldom branching,

about 2 feet in length; stem tinged with purple; leaflets large, broad, deep shining green, very distinct. Flowers pale blue, fertile. Tubers large, kidney shape, somewhat tapering; eyes full, at times situate on raised knobs like the Ashleaf; skin smooth, clear; flesh rather coarse, pale straw. A very handsome Potato, but not of good quality; average cropper. Second early.

25. *King of Flukes*.

Synonyms.—Queen of Flukes; Birmingham Prize-taker; Derbyshire Prize.

Haulm, &c., similar to Dawe's Matchless, moderately robust, from $1\frac{1}{2}$ to 2 feet in length; leaflets of medium size, deep green, rugose. Flowers pale blue. Berries large. Tubers large, broad, flat, of even form; eyes full; skin smooth, pale straw; flesh pale straw, hard. Very handsome Potato; has the habit of growing out on the surface of the ground, many of the tubers thus becoming green; moderate cropper. Second early.

26. *Vanguard* (Bell & Thorpe).

Haulm rather slender, from $1\frac{1}{2}$ to 2 feet in length; stem tinged with purple; leaflets deep green, rugose; similar to Dawe's Matchless, but dies off earlier. Tubers medium, short, flat; eyes full, few in number; skin smooth, pale; flesh pale, firm. Moderate cropper. First early.

27. *Beta* (Bell & Thorpe).

Very similar to preceding, but later and inferior.

28. *Sextus* (Bell & Thorpe).

Haulm and foliage somewhat similar to Dawe's Matchless, of a neat, sturdy growth. Tubers medium size, short, flat, of regular form; eyes few and small; skin rough, pale straw-coloured; flesh pale, firm. A handsome Potato of the fluke section. Moderate cropper.

29. *Harbinger* (Bell & Thorpe).

Plant of the same character as Sextus. Tubers rather small, short, flat, and irregular in form; eyes small; skin smooth, pale; flesh pure white, firm. Fluke section. Light cropper. Third early.

30. *Lapstone*.

Synonyms.—Haigh's Seedling; Cobbler's Lapstone; Almond's Yorkshire Hero; Pebble White; Headley's Nonpareil; Huntingdon Kidney; Yorkshire Hero; Perfection; Rixton Pippin; Ashtop Fluke.

Haulm of moderately robust growth, from $1\frac{1}{2}$ to 2 feet in length; stem pale green, sometimes tinged with purple; leaflets large, broad, very pale green, of a very distinct character. Flowers white, produced in great abundance, but very rarely succeeded by berries. Tubers of medium size, of rather irregular form, some being kidney-shaped, others broad, flat, and some cylindrical and rounded; eyes small, full, and few; skin smooth, pale straw-coloured, generally having a tinge of purple at the crown, which is a characteristic feature; flesh pale straw, firm. Very apt to super-tuberate in some soils and seasons, and to continue to grow late instead of ripening off; a great cropper; of most excellent quality. Rather subject to disease. The varieties of this Potato are very numerous, but have no permanent distinctive characters. Second early; fit for use from October until May.

31. *Fluke*.

Haulm of robust growth, from $1\frac{1}{2}$ to 2 feet long; stem of a dark purplish colour; leaflets rather small, rugose, deep green. Flowers small, crumpled, white, fertile. Tubers large, generally broad, flat, of somewhat irregular form; eyes full; skin slightly rough, of a dark straw colour; flesh pure white, firm. A heavy cropper in some soils; excellent quality. Late.

32. *Model* (Bell & Thorpe).

Haulm and foliage very similar to Fluke; leaflets a little pointed. Grows very late. Flowers white. Tubers short, broad, flat, with a blunt end; skin smooth, pale straw-coloured; flesh white, rather close. A very handsome Potato; heavy cropper. Late.

33. *Amazon* (Bell & Thorpe).

Haulm and foliage of the Berkshire Kidney character, but of somewhat stronger and later growth; height $1\frac{1}{2}$ feet. Flowers white. Tubers medium size, short, broad, flat, rather irregular; eyes few, a little sunken; skin smooth, pale; flesh pale straw, firm. Moderate cropper. Late.

34. *Utilis* (Bell & Thorpe).

Haulm of strong-growing Fluke character, somewhat spreading, about 2 feet long, and foliage shining. Tubers large, flat, coarse, and irregular; eyes small, sunken; skin rough, pale straw-coloured; flesh pale, firm. Light cropper. Late.

35. *Cobble* (Bell & Thorpe).

Haulm rather slender, spreading, somewhat of the character of Dawe's Matchless, from $1\frac{1}{2}$ to 2 feet long; leaflets broad, shining green. Flowers dirty white. Tubers large, long, flat, but somewhat irregular, the end blunt; eyes small, full; skin smooth, pale straw; flesh pale, close. Moderate cropper.

36. *Sedilla* (Bell & Thorpe).

Same haulm and foliage as Cobble. Tubers large, flat, irregular; end blunt or flattened; eyes a little sunken at crown; skin rough, dark straw-coloured; flesh close, yellow. Moderate cropper. Late and worthless.

37. *Clipper* (Bell & Thorpe).

Haulm moderately vigorous, from $1\frac{1}{2}$ to 2 feet long; stem deep green; leaflets broad, rugose, green. Flowers pale. Berry-bearing. Tubers large, long, cylindrical; eyes very numerous, much scattered, forming large knobs on the tuber, giving it a coarse appearance; skin smooth, straw-coloured; flesh pale straw, close-grained. Light cropper. Second early. Worthless.

38. *Eureka* (Biggs).

Plant of compact growth, very robust; haulm green, about 2 feet long, grows very late; leaflets small, deep green, somewhat crumpled and rugose. Flowers bright purple, seldom producing berries. Tubers large, broad, flat, of the Fluke character; eyes full; skin pale, a little rough; flesh white, firm. The latest of all to ripen off. Moderate cropper. Sample very irregular.

39. *Princesse*.

Haulm slender, spreading, but of compact growth, about $1\frac{1}{2}$ feet long; stem light green; leaflets smooth, light green. Flowers pale blue, producing berries. Tubers long, narrow, cylindrical, somewhat tapering and twisted; eyes full, very numerous,

scattered over the entire surface ; skin coarse, pale ; flesh pale, firm. A peculiar but utterly worthless variety. Light cropper. Second early.

40. *Oxfordshire Kidney*.

Synonym.—Minchin's Eclipse.

Haulm moderately robust, of erect growth, with the character of Dawe's Matchless, $2\frac{1}{2}$ feet long ; stem pale green throughout ; leaflets pale green, rugose. Flowers bright blue, fertile. Tubers of average size, rather short, flat, of even and regular form ; eyes few and small ; skin very rough, dark straw-coloured ; flesh pale, firm. Good cropper. Grows late. Handsome.

§ 2 Half-long.

41. *Giant King*.

Haulm slender, of the character of the Kentish Ashleaf, 12 to 18 inches high ; leaflets somewhat pointed, rugose, with a purplish tinge. Tubers large, broad, flat, somewhat irregular ; eyes large, sunken ; skin smooth, straw-coloured ; flesh pale straw-coloured, rather close. Average cropper. Rather a handsome large tuber from so dwarf a plant. First early.

42. *Milky White*.

Haulm slender, of spreading growth, about 12 inches long ; stem reddish ; leaflets small, crumpled, like those of the Nettle-leaved. Flowers light blue, fertile. Tubers rather below medium size, half long, rounded ; eyes full ; skin smooth, pale. Flesh very white, firm. A moderate cropper. Comes rather early into use.

43. *Peake's First Early* (Peake).

Haulm slender, of the character of the Kentish Ashleaf, about 9 inches high, ripens off very early. Tubers medium-sized, half long, broad, flattened, resembling Giant King ; eyes a little sunken, mostly situate at the crown ; skin smooth, pale straw-coloured ; flesh yellow, rather close. A fair cropper. Very early.

44. *Bresee's Climax*.

Synonyms.—Gravenstein ; Coppermine ; Climax.

Haulm moderately strong, about $1\frac{1}{2}$ feet long ; stem light green,

erect, branching; leaflets large, broad, pale green, frequently blotched with yellow. Flowers rare. Tubers large, long, rounded, somewhat tapering; eyes a little sunken, rather thickly situate near to the crown; skin rough, straw colour; flesh white, firm. Excellent quality, great cropper, and the best type of the American White Potatoes. Second early. *First-class Certificate.*

45. *Early Goodrich.*

Synonym.—Bushell's Seedling.

Haulm very similar in character to Climax. Tubers smaller, and of a coarser appearance than Climax, but much resembling it. Inferior. Moderate cropper. Second early.

46. *Springfield White.*

Synonym.—Harrison's.

Haulm and foliage of the same character as Climax, but paler and of a much stronger growth, and leaflets more pointed. Flowers white, sterile. Tubers very large, half round, frequently flattened, rather coarse in appearance; eyes large, a little sunken; skin smooth, nearly white; flesh close, pure white. Heavy cropper. Second early.

47. *Bresee's Peerless.*

Synonym.—Peerless.

Haulm moderately vigorous, from $1\frac{1}{2}$ to 2 feet long; stem deep green, of the same general character as Climax; leaflets broad, green. Flowers very rare. Tubers large, long, broad, flat, somewhat tapering; eyes a little sunken, having a faint tinge of pink; skin slightly rough, straw colour; flesh white, firm. Heavy cropper. Very handsome. Mid-season.

48. *Bresee's Prolific.*

Synonym.—Brown's Prolific Kidney.

Haulm vigorous, $1\frac{1}{2}$ feet in length. Same character as Climax, but having the leaflets rather smaller; stem pale green. Tubers large, long, flat, even, handsome shape; eyes full, a little sunken, of a pretty pink colour; skin thin, smooth, straw shaded with faint pink; flesh white. A heavy cropper, and particularly handsome. Mid-season.

49. *Charden.*

Haulm very robust, branched, about 3 feet in length; stem pale green; leaflets pale green, rugose, pointed. Flowers abundant, pale shaded lilac. Berries few. Tubers very large, very coarse and irregular, of a long rounded form, somewhat tapering; eyes numerous, wide, very much sunken; skin smooth, pale; flesh pale straw. A great cropper. Very coarse Cattle Potato. Mid-season.

50. *Golden Gem.*

Synonym.—Jaune ronde hâtive.

Haulm slender, spreading, from 2 feet to $2\frac{1}{2}$ feet in length; stem pale green; leaflets small, rugose, pale green. Flowers pale. Tubers medium-sized, of a long rounded form; eyes numerous, scattered, much sunken; skin smooth, yellow; flesh yellow, firm.

51. *Dourie Hall Favorite* (Montagu).

Haulm robust, of compact growth, about 3 feet in length; stem pale green; leaflets large, broad, pale green. Flowers bluish-white. Berries none. Tubers medium-sized, half round, sometimes long; eyes few; skin a little rough, pale straw-coloured; flesh white, firm. Good cropper. Mid-season. Very distinct.

52. *Paterson's Victoria.*

Haulm of strong upright growth, about $2\frac{1}{2}$ feet in length; stem pale green, tinged with purple; leaflets small, rugose, somewhat pointed, green. Flowers purple. Berries numerous, very large. Tubers medium-sized, half round, frequently a little flattened, with a blunt end; eyes a little sunken; skin rough, but sometimes smooth, pale straw; flesh white, firm. A very excellent even cropping Potato. Late.

§ 3. Round.

53. *Regents.*

Synonyms.—York Regent; Mitchell's Prolific; Early Oxford; Pink-eyed Regent; Rintoul's White Don; Scotch Don; Rusty Coat; Rough Jacket.

Haulm moderately robust, spreading, from 2 to 3 feet in length; stem pale green; leaflets small, rugose, green. Flowers scarce,

pale blue, seldom producing berries. Tubers round, generally of even medium size, but sometimes large, long, flat, and coarse; eyes a little sunken; skin rough, pale straw; flesh white, firm. Excellent quality. Productive. Mid-season.

54. *Dalmahoy*.

Synonym.—Goldfinder.

Haulm and general growth not distinguishable from Regents; ripens off earlier, and has the habit of throwing the tubers a little more on to the surface of the ground. Tubers above medium size, generally of more even and regular form than Regents, but of very similar character. A very productive excellent Potato for general use.

55. *Walker's Early*.

Like a strong Regent, but having the tubers much smoother in the skin and with deeper eyes than the Regents.

56. *Early Prince*.

Haulm, &c., same character as Regent, but ripens off much earlier. Tubers large; eyes rather deep; skin smooth, like Walker's Early. Second Early.

57. *Early Shaw*.

Haulm, &c., of somewhat slender Regent character of growth, and ripens off earlier. Flowers sterile. Tubers medium size, roundish, frequently half long and broad; eyes large or wide, a little sunken; skin smooth, pale straw-coloured; flesh pale straw-coloured. Average cropper. Second early.

58. *East Somerset Champion*.

Haulm moderately robust, of the Regent character, but stem slightly coloured. Tubers very large, broad, flat, of somewhat irregular form, being blunt at the crown and hollowed at the stalk; eyes small, rather sunken; skin a little rough, pale straw-coloured; flesh pale straw, rather close. A very heavy cropper. Ripens same time as Regents, but is in best condition for use late in spring.

59. *Early Perfection*.

Haulm, &c., of somewhat slender Regent character of growth,

about 18 inches in length; leaflets rather broad, flat. Flowers pale blue, sterile. Tubers below medium size, roundish, but frequently long; surface very even and regular; eyes very few and full; skin clear, pale straw, a little rough. Flesh pale straw. Light cropper. Early.

60. *Early Union* (Turner).

Haulm rather slender, of the character of the Kentish Ashleaf, about $1\frac{1}{2}$ feet in length. Flowers pale lavender, sterile. Tubers medium size, round, of even regular form, a little flattened at the crown and hollowed at the stalk; eyes few, a little sunken, nearly all situate at the crown; skin clear pale straw, a little rough; flesh pale straw. A good cropper. Very nice clean-looking Potato. Early.

61. *Rector of Woodstock* (Fenn).

Haulm rather slender, spreading, from 2 to $2\frac{1}{2}$ feet in length; stem slightly coloured purple; leaflets small, rugose, green. Flowers bluish, succeeded by berries. Tubers rather below medium size, of roundish form, frequently a little flattened at the crown; eyes small, mostly situate at the crown; skin smooth, clear, pale straw; flesh pale straw, very firm. Excellent quality. Moderate cropper. Early. A very pretty Potato. *Previously Certificated.*

62. *Fenn's Early Market.*

Haulm slender, resembling the Ashleaf Kidney, about 12 inches long; stem green; leaflets small, curled, green. Sterile. Tubers medium-sized, of roundish form, sometimes a little broad and elongated, and hollowed at the crown; eyes slightly sunken; skin a little rough, very clear, pale straw; flesh pale straw. Excellent quality. A very clean, handsome-looking Potato, and a good cropper. First early. *First-class Certificate.*

63. *Bonne Wilhelmine.*

Haulm rather slender, spreading, about 2 feet in length; stem a little coloured; leaflets rather broad, rugose, pale green. Flowers pale blue, fertile. Tubers below medium size, half round, even form; eyes few and full; skin smooth, clear, pale straw-coloured; flesh pale straw-coloured. A moderate cropper. Second early.

64. *Seedling No. 1* (Veitch).

Haulm of weak erect growth, about 12 inches in length; stem

green; leaflets small, rugose, green. Tubers small, roundish; eyes few, full; skin a little rough, pale straw; flesh pale straw. Light cropper. Second early.

65. *Prince's Favorite.*

Haulm, &c., slender, of the character of Kentish Ashleaf, about 18 inches long. Tubers very small, round; eyes few, a little sunken; skin clear, pale, smooth; flesh pale straw. Worthless. Second early.

66. *Paxton's Wonder.*

Haulm moderately vigorous, about 1½ feet in length; stem green; leaflets broad, pale green, like Lapstone, but rugose. Sterile. Tubers small, round, even, and regular; eyes few, full; skin smooth, clear; flesh pale straw. Small cropper. Early, but too small.

67. *The Bloomer.*

Haulm slender, very spreading, from 12 to 16 inches long; stem green; leaflets very much curled, pale green. Flowers pale, fertile. Tubers small, round, of even, regular form; eyes full; skin clear, smooth; flesh pale straw-coloured. Small cropper. Early. Too small.

68. *Pritchard's Seedling.*

Haulm small, of erect growth, about 12 inches long; stem green; leaflets broad, deep green, rugose. Flowers pale, fertile. Tubers medium-sized, half round, even form; eyes few, full; skin smooth, pale straw; flesh pale, firm. Light cropper. Mid-season.

69. *Royal Danish.*

Haulm small, of erect growth, from 18 inches to 2 feet long; stem a little coloured purple; leaflets small, much pointed, rugose, bright green. Tubers below medium size, half round, a little elongated; eyes sunken; skin smooth, pale; flesh pale, yellow, soft. Light cropper. General season. Too small, worthless.

70. *Onwards (Fenn).*

Habit same as Kentish Ashleaf, with somewhat darker and more rugose leaflets. Flowers sterile. Tubers very small, flat, round,

irregular; skin pale straw-coloured; flesh pale. Early. Too small. Worthless.

71. *No. 2, White-blossomed* (Biggs).

Haulm robust, but prostrate, about 2 feet long, not branched; stem of a purplish tinge; leaflets very broad, rugose, green. Flowers white, sterile. Tubers large, broad, flat, coarse, and uneven; eyes prominent; skin smooth, pale straw-coloured; flesh white, rather soft. A moderate cropper. Second early.

Series II. SKIN RED.

§ 1. Long or Kidney-shaped.

72. *Early Sovereign*.

Haulm of compact growth, about 12 inches long, ripens off early; stem pale green; leaflets very large, broad. Flowers rare. Tubers average size, of a long, narrow, cylindrical form, slightly tapering; eyes scattered over the entire surface, but not too numerous, a little sunken; skin smooth, of a pale rose colour; flesh white. A good average cropper. Early.

73. *American Late Rose*.

Synonym.—American Pale Rose.

Haulm of free vigorous growth, about 2 feet long; stem pale green; leaflets large, broad, very pale green. Flowers white, generally sterile. Tubers very large, long, cylindrical, from 7 to 10 inches, and generally a little flattened; eyes not numerous, but scattered nearly over the entire surface, a little sunken, of a deep rose colour; skin smooth, pale rosy-pink, very pretty; flesh white and floury. Excellent quality. A most enormous cropper, from eight to ten large tubers being produced at a single stool, and frequently much more, and these tubers often weighing over a pound each. Second early. *First-class Certificate*.

74. *American Early Rose*.

Haulm and habit of plant exactly resembling the Pale or Late Rose; ripens off earlier, and is not so tall in stem or so productive; the tubers also are smaller, more kidney-shaped, and of a more uniform pink or rose colour. Much inferior to the Late Rose.

75. *Extra Early Vermont* (Bliss & Sons).

Haulm and habit of plant similar to Early Rose, but only about 12 inches long, ripens off very early. Tubers large, long, cylindrical, somewhat flattened, very similar in all characters to Late Rose, but is ripe some ten days earlier; flesh white and floury. Very excellent quality. Average cropper. Early. *First-class Certificate.*

76. *Belvoir Kidney.*

Synonym.—Taylor's Kidney; Rognon Rose.

Haulm rather slender and straggling, about 2 feet in length; stem tinged red; leaflets rather small, dark green, rugose. Flowers white, sparingly fertile. Tubers average size, long, flat, regular kidney shape; eyes very few and small; skin smooth, dull pink; flesh yellow. Handsome in appearance. Average cropper. Mid-season.

77. *Wonderful Red Kidney.*

Haulm rather slender, very much in character of Kentish Ash-leaf, from 12 to 18 inches long; leaflets small, rugose, having a reddish tinge. Tubers rather small, but neat in form; eyes few, full; skin smooth, pale red; flesh yellow. A great cropper, but the greater portion are very small and worthless. Early.

78. *Pousse Debout.*

Haulm vigorous, of compact growth, about 2 feet in length; stem reddish; leaflets broad, green. Flowers white, fertile. Tubers small, long, narrow, tapering, rounded kidney; eyes full, on raised knobs; skin smooth, pale red; flesh pale, firm. A great cropper, but the greater portion are quite small and worthless. Mid-season.

79. *Saucisse.*

Haulm rather slender, but growing to nearly 4 feet in length and branching; stem reddish; leaflets small, rugose, green. Tubers average size, short, broad, flat, rather irregular in form; eyes full, even; skin smooth, deep rose; flesh yellow, hard, frequently streaked with red. A great cropper, but very inferior. General season.

80. *French Red.*

Haulm very vigorous, branching, from 3 to 3½ feet in length, grows late; stem reddish; leaflets small, rugose, deep green. Tubers average size, but very irregular in form, some being round, others long, cylindrical; eyes numerous, scattered over the entire surface; skin rough, red; flesh yellow. A great cropper, but the greater portion very small and worthless. Late.

81. *Cottager's Red.*

Haulm moderately vigorous, straggling, about 4 feet in length; stem reddish; leaflets small, rugose, green. Tubers average size, of rather irregular form, some being long, broad, and flat, whilst others are nearly round; eyes scattered, a little sunken; skin rough, bright red. Flesh yellow. A somewhat irregular cropping Potato.

82. *Rosée de Conflans.*

Haulm vigorous, of compact growth, from 3 to 3½ feet in length; stem reddish; leaflets broad, green. Flowers white, fertile. Tubers average size, very long, narrow, cylindrical, twisted, and tapering, with knobs; eyes full, scattered; skin smooth, dull red; flesh yellow, streaked with red. A very peculiar-looking but altogether worthless variety.

83. *Prince Imperial.*

Haulm moderately robust, spreading, from 2 to 2½ feet in length; stem reddish; leaflets small, pale green, rugose. Flowers white, fertile. Tubers average size, of rather irregular form, a long pointed kidney, frequently twisted like a crab's claw; eyes few, full; skin rough, reddish-purple; flesh yellow. Moderate cropper. General season. Worthless.

84. *Vitelotte.*

Haulm very robust and gross, about 2½ feet in length, and grows late; stem green, with a reddish tint; leaflets rather broad, rugose, green, with reddish veining. Flowers white, fertile. Tubers small, long, narrow, cylindrical, and pointed or tapering; eyes deep, covering nearly the entire surface, so that it appears to be nearly all eyes; skin smooth, reddish-purple;

flesh white, streaked with red. A very singular variety, but entirely worthless. Fit to be grown only as a curiosity.

85. *Bountiful* (Fenn).

Haulm rather slender, spreading, from $1\frac{1}{2}$ to 2 feet in length; ripens off early; stem reddish; leaflets small, green, rugose. Flowers white, fertile. Tubers of true kidney shape, medium size, short, even, and of very regular form; eyes few, full, giving it a very smooth, even surface; skin smooth, reddish-purple; flesh pale, firm. A very neat, handsome Potato, and a fair cropper. Second early.

86. *Rognon Violet*.

Haulm rather slender and straggling, about $3\frac{1}{2}$ feet in length; stem purple; leaflets small, rugose, dark green. Flowers white, fertile. Tubers large, long, flat, kidney shape, of even regular form; eyes full, scattered, but not numerous; skin smooth, of a reddish-purple; flesh pale straw, firm. A fair average cropper. Late.

87. *Callo*.

Whole plant somewhat of the Lapstone character. Haulm moderately robust, about 2 feet in length; stem pale green, tinged red; leaflets broad, pale green, quite smooth. Tubers medium size, long, cylindrical, regular form; eyes wide, scattered, of a dark purple; skin smooth, reddish-purple; flesh white, firm. A heavy-cropping Potato. Late.

88. *California Kidney*.

Haulm slender, about $1\frac{1}{2}$ feet in length, ripens off early; stem pale green; leaflets broad, green, rugose, of the Regent type. Flowers few, pale blue, sterile. Tubers large, long, cylindrical; eyes numerous, deeply-placed, and scattered over entire surface, giving it a rough, uneven appearance; skin smooth, bright red, occasionally flaked with white; flesh pale straw, hard, coarse. Moderate cropper. Early.

89. *Truffe d'Aout*.

Plant of vigorous, compact growth, of the appearance of Myatt's Prolific, about $1\frac{1}{2}$ feet in length. Flowers pale, fertile. Tubers below medium size, of short, oblong shape; eyes deep, numerous,

scattered; skin a little rough, dull red; flesh pale yellow, streaked with red. A moderate cropper, but a very bad, worthless sort. Late.

§ 2. Round.

90. *Red Emperor*.

Haulm slender, straggling, and spreading, about 2½ feet in length; stem tinged with red; leaflets small, pointed, rugose, light green. Flowers light blue, sparingly fertile. Tubers medium-sized, round, somewhat flattened, very even and regular; eyes full and few, of a bright red; skin generally smooth, of a clear light red, sometimes with a flake of white; flesh pale straw, firm. Excellent quality. A very handsome Potato. Average cropper. Second early. It is somewhat tender and subject to disease.

91. *Combe Hays*.

Very similar to Red Emperor, but somewhat later. Bears berries in abundance, and the tubers have somewhat rougher skins.

92. *English Rose* (Fenn).

Haulm and foliage similar to Kentish Ashleaf, about 12 inches high, ripens off early. Flowers reddish-white. Tubers small, round, with a smooth even surface; eyes full, small; skin smooth, pale red; flesh white, streaked with pink. Early, but too small and not of good quality.

93. *King of the Earlies*.

Haulm of compact growth, about 12 inches long, ripens off very early; stem pale green; leaflets very large, broad, of a very pale green. Flowers very rare. Tubers average size, half round, flat; eyes a little sunken; skin smooth, of a faint rosy-pink colour; flesh white. Moderate cropper. Early.

94. *Rouge de Strasbourg*.

Haulm very robust, much branched, of erect and compact growth, about 3 feet in length, grows very late; stem purplish; leaflets rather broad, dark green-shaded purple. Flowers purplish-white, seldom fertile. Tubers medium size, long, roundish, irregular, coarse; eyes deep, numerous, scattered over entire

surface; skin smooth, deep red; flesh white, close-grained. Bad. A coarse, heavy-cropping, late Potato.

95. *Red Regent*.

Synonym.—De Zelande.

Haulm very robust, much branched, of erect and compact growth, from 3 to 3½ feet in length; stem reddish; leaflets rather broad, light green. Flowers white, seldom fertile. Tubers large, exactly resembling the Regents; skin rough, deep red; flesh pale. A heavy-cropping, late Potato, suited for field culture.

96. *Wood's Scarlet Prolific*.

Haulm moderately robust, erect, compact growth, about 2 feet in length, grows very late; stem light green; leaflets pale green, rugose. Flowers light purplish, fertile. Tubers very large, long, flattened, even, and regular, nearly all of the same size at a stool, and are borne close to the haulm; eyes deep, scattered over surface; skin rough, reddish-purple; flesh white, occasionally streaked with red. A very handsome, late Potato, and a great cropper. Second-class quality.

97. *Webb's Red Blossom*.

Haulm robust, erect, but much branched, about 2½ feet in length, grows very late; stem green; leaflets broad, rugose, green. Flowers white, sterile. Tubers long, flat, very irregular, some being large and handsome, but the greater portion small; eyes deep, scattered; skin rough, bright purplish-red; flesh pale straw, streaked with red. Very coarse-growing. Great cropper. Late.

98. *Vermont Beauty* (Bliss & Sons).

Synonym.—Brownell's Beauty.

Haulm small, of the same character as Early Rose, about 1½ feet in length, ripens off early; leaflets broad, pale green. Flowers purplish-white. Tubers very large, long, broad, and flattened, very uniform in character, and borne close to the haulm, about five or six to each stool, with seldom any small ones; eyes wide open, scattered, but not numerous; skin rough, of a dull brick-red; flesh white, floury. Excellent quality. A remarkably handsome second early red Potato, and a heavy cropper. *First-class Certificate*.

99. *Red-skinned Flour-ball.*

Synonyms.—Improved Red-skinned Flour-ball; Barkshire's Red-skinned Flour-ball; Red Peach-blossom; Boston Red; American Red; Kentish Red.

Haulm strong and robust, frequently much branched, from 3 to 3½ feet in length; stem pale, with a reddish tinge; leaflets medium-sized, flat, pointed, rugose, pale green. Flowers shaded lilac or lavender, produced in great abundance; very seldom fertile. Tubers very large, round, but frequently a little flattened, and often of very coarse and irregular form, one stool producing handsome, well-formed tubers, whilst another produces them of all shapes and sizes; eyes mostly situate at the crown, which is a little sunken, and it is also a little hollowed at the stalk; skin rough, of a light red colour, but on many of the malformed tubers quite smooth, and of a deep red; flesh white, and, for a large Potato, of excellent quality. It is a large and heavy cropper. General season.

100. *White Peach-blossom.*

Haulm of strong and compact growth, much branched, about 3 feet in length; stem green; leaflets broad, pointed, smooth, green. Flowers rosy-purple, fertile. Tubers very large, round, coarse in appearance; eyes few, but deep, of a bright rose colour; skin rough, of a pale pink colour; flesh white, firm. A very heavy-cropping, but coarse, late Potato.

Series III. SKIN PURPLE OR BLUE.

101. *Paterson's Blue.*

Synonym.—Morayshire Blue.

Haulm robust, of compact, rather erect growth, about 3 feet in length; stem reddish; leaflets small, rugose, deep green. Flowers purplish-white, occasionally fertile. Tubers large, round, flattened, frequently elongated, rather coarse in appearance; eyes deep, scattered; skin smooth, reddish-purple; flesh white, very firm. Moderate cropper. Late.

102. *Purple Regent.*

Plant habit of true Regent, but having a reddish stem, and the leaflets of a somewhat deeper green. Flowers purplish-white,

seldom fertile. Tubers medium-sized, half long, a little flattened, surface uneven, and rather coarse in appearance; eyes small, scattered; skin smooth, reddish-purple; flesh white, firm. A very poor cropper, and a generally bad sample. General season.

103. *Compton Surprise* (Bliss & Sons).

Haulm very robust and gross, from $2\frac{1}{2}$ to 3 feet in length, ripens off early; stem green, tinged with red; leaflets very large, broad, pale green. Flowers white, sterile. Tubers large, long, flattened, coarse in appearance; eyes numerous, very deep, scattered over entire surface; skin smooth, dark purple; flesh white, firm. A moderate cropper. Mid-season. Rather coarse.

104. *Scotch Blue*.

Synonym.—Duncan's Seedling.

Haulm moderately vigorous, about 2 feet in length, ripens off early; stem reddish; leaflets large, broad, rather pale green. Flowers none. Tubers medium-sized, oblong, flattened, frequently much elongated and cylindrical, with a smooth, even outline; eyes wide open; skin smooth, dark violet; flesh white, firm. Very handsome, but a very uncertain cropper. Mid-season.

105. *Summer Hill Seedling* (Smith).

Haulm very strong and robust, from $2\frac{1}{2}$ to 3 feet in length; stem having a reddish tinge; leaflets large, broad, pale, with a tinge of red. Flowers bluish, fertile. Tubers medium size, oblong, flattened, of a finely-rounded, even outline; eyes small, full; skin smooth, dark purple; flesh white, firm. A very handsome Potato, and a fair average cropper. Late.

106. *Black Jack*.

Synonyms.—Black Bob; Black Nigger.

Haulm robust, straggling, and somewhat branching, about $3\frac{1}{2}$ feet in length; stem reddish-purple; leaflets small, rugose, deep green. Flowers blue, seldom fertile. Tubers medium-sized, round; eyes deep; skin smooth, very dark purple, almost black; flesh dark mottled purple and white. A poor cropping and utterly useless late Potato. Fit only to be grown as a curiosity.

Series IV. SKIN STREAKED OR FLAKED.

107. *Gleason's Late.*

Synonym.—Hundredfold Fluke.

Haulm robust, branching, about $2\frac{1}{2}$ feet in length; stem of a reddish tinge; leaflets flat, pointed, green, with coloured veins. Flowers purple, generally sterile. Tubers large, generally broad, flat, like a Fluke, but frequently of very irregular form, as if two or three were joined together; eyes few, full; skin smooth, very pale, with large patches of rosy-purple, giving it a very singular piebald appearance; flesh white, rather hard. A good average cropper; late; very handsome.

108. *Painted Lady.*

Haulm strong and robust, of the Fluke character, but dies off earlier, from $2\frac{1}{2}$ to 3 feet long; stem green; leaflets small, rugose, green, like Regents. Flowers rosy-red, fertile. Tubers very irregular in size and form, but chiefly small, of a long, flat kidney shape; eyes few; skin on some tubers rough, and on others smooth; some pure pale straw-coloured, others streaked and splashed with deep rosy-purple; flesh pale, firm. A light cropper, the greater portion being small; late; worthless.

109. *Willard.*

Synonym.—Belgian Wax Ball.

Haulm moderately strong, erect, from 1 to $1\frac{1}{2}$ feet in length; stem pale green; leaflets broad, rugose, pale green. Flowers very rare. Tubers large, long, cylindrical, inclining to conical, generally of even and regular form; eyes wide, even with surface, scattered; skin rough, bright red, much flaked with white around the eyes; flesh white, hard, and inferior. A very handsome taking Potato. Moderate cropper. Second early.

110. *Red Breadfruit.*

Haulm slender, of rather compact growth, about 2 feet in length; stem green; leaflets small, rugose, green, of the Regent character. Flowers pale blue, fertile. Tubers rather below medium, round, somewhat hollowed at the crown and also at stalk; eyes full; skin smooth, reddish-purple, flaked with white; flesh pale straw-coloured. A moderate cropper. Second early.

111. *Pink-eyed Rusty-coat.*

Haulm of strong but straggling growth, from 3 to 3½ feet in length; stem purplish; leaflets small, pointed, rugose, green. Flowers deep rosy-purple, borne in great abundance, generally sterile. Tubers large, of very irregular round form, and coarse; eyes wide open, of a rosy-red colour; skin smooth, white, flaked with pink; flesh white, firm. A heavy-cropping but rather coarse Potato. General season.

112. *Blanchard.*

Synonym.—Fillpeck (Peake).

Haulm slender, spreading, from 12 to 18 inches in length; stem dark purple; leaflets small, rugose, dark green. Flowers light or pale blue, fertile. Tubers medium, round, flattened at the crown, even and regular sample; eyes nearly all situate at crown, full, of a dark purple colour; skin smooth, pale straw, flaked with purple; flesh yellow, firm. A clean, pleasant-looking Potato. Good quality. Moderate cropper. Second early.

113. *Rintoul's Striped Don.*

Haulm and habit of a robust-growing Regent. Tubers very large, roundish; eyes deeply set, of a dark purple colour; skin rough, pale straw, streaked and flaked with purple; flesh pale, firm. A handsome and excellent great-cropping Potato. Second early.

114. *Fortyfold.*

Haulm and habit of Regent, but a little more slender. Tubers scarcely medium size, round; eyes few, a little sunken; skin light reddish-purple, flaked with white; flesh white, firm. Excellent quality. Moderate cropping. Second early.

115. *Free-bearer.*

Synonym.—Benson's Round.

Haulm and habit of a strong-growing Regent, exposes the tubers on to the surface of the ground. Tubers very large, rather coarse, long, rounded form, like Striped Don; eyes large, deep; skin rough, dark purple, flaked with white; flesh white, firm. A heavy-cropping Potato, and good for general crop field culture.

XIX. Report on Kidney Beans Grown at Chiswick in 1873. By A. F. BARRON, Gardener-in-Chief, and Secretary to Fruit Committee.

RUNNER KIDNEY BEANS.

1. *Dutch Scarlet Runners.*

A much stronger grower than the English, more branching, and with larger foliage and larger pods. It is not quite so early in bearing, and much less prolific.

2. *English Scarlet Runners.*

A more slender grower than the Dutch, but earlier, and a much better cropper.

3. *Carter's Champion.*

Synonym.—Giant Scarlet Runner.

Of the same habit as the Dutch, but equally as prolific as the English, with large pods. Commended.

4. *Painted Lady* (German)—*Painted Lady* (English).

Similar to the English Scarlet Runners, but differing in the colour of the seed and flowers.

5. *Purple-seeded Champion.*

Similar to Dutch Scarlet, with purplish-coloured seed.

6. *Black Runners.*

Similar to English Scarlet, with black seed.

7. *Large White*—*White-seeded Scarlet Runners*—*White Champion.*

Of the same habit as Dutch Scarlet. A great and heavy cropper. Differing from the scarlet in having white flowers and white seed.

8. *White Case Knife* (French).—*White Case Knife* (English).—*White Dutch Runners.*

Plant of straggling growth, wonderfully prolific. Pods long, narrow, pale green. Ripe seed small, white. Inferior quality. The French saved seed proved inferior to the English.

9 *Haricot* (foreign seed)—*Intestin*.

Resembling White Case Knife, but smaller and inferior.

10. *Eclipse Runner*.

Plant of the same habit as White Case Knife. The pods somewhat coloured. Ripe seed flat, grey, striped with black.

11. *St. Seurin*.

Resembling Eclipse, but with smaller pods. Ripe seed flat, grey-spotted and striped with black, distinct.

12. *Mont d'Or Butter Bean* (Carter).

Plant of free and vigorous growth, requiring stakes from 5 to 6 feet high. Foliage pale green. The pods, which are produced in great abundance, are from 6 to 8 inches long, of rounded form, thick, and fleshy, of a pretty pale lemon colour, which they assume when quite young, and retain throughout. It boils tender and is of good quality. Ripe seed dark liver-coloured. Was awarded a *First-class Certificate*.

DWARF KIDNEY BEANS.

1. *Dwarf Butter Bean* (Carter).

Plant of vigorous growth, branching and bushy. Height about 2 feet. A great cropper. Pods from 3 to 4 inches long, thick and fleshy, of a pale lemon colour, which they assume when quite young, and retain throughout. It is tender when cooked, and of excellent quality. Ripe seed black. Awarded a *First-class Certificate*.

2. *Boston Angel* (Vick).

Plant about 2 feet high, vigorous and bushy. A great cropper. Pods short, showing the large seeds through. Inferior. Ripe seed almost round, straw yellow.

3. *Carter's White Advancer* (Carter).

Plant moderately robust, very productive, very early. Pods fine long green. A decided improvement on the White Canterbury. Ripe seed small, white. Awarded a *First-class Certificate*.

4. *White Canterbury.*

Smaller and inferior to Carter's White Advancer.

5. *White Flageolet.*

Small, sickly plant. Inferior.

6. *Dwarf White-seeded Wax.*

A very inferior variety.

7. *Large-podded Early Princess.*

A sort of half runner, with small, short pods. Inferior. Ripe seed small, nearly round, white.

8. *Small-podded Early Princess.*

Smaller plant than the preceding. Bad.

9. *Asparagus (English).*

Similar to preceding.

10. *Miniature White (English).*

Similar to preceding, but with very small round white seed.

11. *Royal Dwarf.*

Plant of compact dwarf growth, and producing a great abundance of fine, medium-sized pods. Very early. Ripe seed small, buff or light-dun colour.

12. *Newington Wonder.*

Plant of compact growth, and bearing an immense number of small thick pods in succession. On this account it is much preferred by some. Ripe seed small, buff colour. The English saved seed of this proved superior to the Italian.

13. *Minier's First Early Dwarf.*

Plant of compact growth and very productive. Early. Ripe seed small, nearly round, pale buff.

14. *Early Gem.*

Plant, &c., similar to Minier's Early, but having much larger seeds.

15. *Pale Dun—Light Dun—Long-podded Dun.*

Plant vigorous. Good cropper. Second early. Ripe seed long, pale buff or dun colour. The English saved seed of this proved superior to the French and Italian.

16. *Yellow Canterbury—New Kidney.*

Plant of compact growth. Average cropper. Early. Ripe seed long, dark yellow.

17. *Yellow Six Weeks—Sir Joseph Paxton.*

Very similar to preceding, but having the ripe seed small, nearly round, dark yellow.

18. *Liver Colour—Dark Dun.*

Fair average cropper. Second Early. Ripe seed, long, dark dun or liver colour.

19. *Cutbush's Giant Dwarf—Red Flageolet—Crimson Flageolet—Flageolet—Long-podded Purple-seeded.*

Plant of strong robust growth. A great and heavy cropper. Pods very long, thick, fleshy, and handsome. Second Early or main crop. Ripe seed long, crimson. Awarded a *First-class Certificate*.

20. *Canadian Wonder.*

A smaller form of the preceding.

21. *Negro—Small Negro.*

A very early fine prolific dwarf-habited sort. Ripe seed small, black.

22. *Negro Longpod—Long-podded Negro—Long-podded Black Dwarf—Black Canterbury.*

A stronger grower, with larger pods, and later than the Small Negro.

23. *Pheasant's Eye—Exhibition Dwarf—Kemsley's New Dwarf—Victoria.*

Plant of dwarf compact habit, and a fair cropper: Ripe seed long, white, with black eyes.

24. *Nonpareil*.

A fully stronger grower than Pheasant's Eye, but similar. Ripe seed white, crimson eye, and speckled.

25. *China or Robin's Egg*.

Plant dwarf. Pods rather small. Ripe seed small, white-speckled red.

26. *Sion House*.

Plant robust, and a great cropper. The pods frequently a little coloured. Ripe seed long, buff-speckled crimson.

27. *Dell's Kidney*.

Plant habit of Sion House. The pods are much coloured and striped with dark brown, and on that account very objectionable. Ripe seed light dun, speckled black.

28. *Red-speckled (French)*.

Plant robust. Pods much spotted and coloured. Ripe seed crimson-speckled.

29. *Fulmer's Forcing—Long-podded, Red-speckled, Purple-speckled*.

A good general cropping variety. Ripe seed crimson-speckled.

30. *Mohawk*.

A good free-bearing variety. Ripe seed dark brown-speckled.

31. *Osborn's New Early Forcing*.

A fine dwarf prolific early variety. Ripe seed dark brown-speckled. Awarded a *First-class Certificate*.

32. *Black-speckled*.

A strong-growing variety. Ripe seed black-speckled.

XX. Report on Tomatoes Grown in the Garden at Chiswick in 1873. By A. F. BARRON, Gardener-in-Chief.

1. *Hathaway's Excelsior* (Vick & Co.).

Plant of strong vigorous growth. Leaves moderately cut. Very free-bearing. Early. Fruit large, round, generally smooth, becoming corrugated only when grown very strong. Of a fine red colour. Awarded a *First-class Certificate*.

2. *Grosse Rouge Hâtive* (Large Early Red).

A fine large free-bearing early variety. Fruit large, somewhat corrugated. Of a fine deep red colour.

3. *Cedar Hill* (Carter).

Same as *Grosse Rouge Hâtive*.

4. *Arlington* (Carter).

A good selection of *Grosse Rouge Hâtive*.

5. *Earley's Defiance*.

A large and fine selection of *Grosse Rouge Hâtive*, having the fruits but little corrugated.

6. *Hepper's Goliath*.

Very strong-growing. Fruit very large, much corrugated, and coarse. Of a fine red colour. A shy cropper, and somewhat late.

7. *Hepper's Sensation*.

Same as *Hepper's Goliath*.

8. *New American* (Vick).

Plant moderately robust. Fruit of medium size, obovate, in shape like a large plum, quite smooth. Of a pretty pale crimson colour. Quite distinct. Free-bearing. Early.

9. *Portsmouth* (Vick).

Plant of strong robust growth. Fruit very large, corrugated. Of a pale red colour. A late and rather shy bearer.

10. *Grape Shot*.

Same as *Large Round Cherry*.

XXI. Report on Peas Grown in the Garden at Chiswick, 1873.

By A. F. BARRON, Gardener-in-Chief.

1. *Dillistone's Early*.*Description*.—See Proc. R. H. S. vol. i., 341.

Sown March 21st. Fit for use June 20th.

2. *Danecroft Rival*.*Synonyms*.—Sutton's Emerald Gem ; Girling's Danecroft.*Description*.—See Proc. R. H. S. vol. iii. N.S., cxlvii.

Sown March 21st. Fit for use June 20th.

3. *Nabob* (Laxton).*Description*.—See Proc. R. H. S. vol. iii. N.S., cxlix.

Sown March 21st. Fit for use June 27th.

4. *The Rector* (W. Dean).

This proved nearly identical with Victoria Marrow. Foliage of a somewhat paler green.

Description.—See Proc. R. H. S. vol. i., 355.5. *New var. from Capt. Brooke, New Zealand*.

This proved identical with the Old Queen of the Dwarfs.

Description.—See Proc. R. H. S. vol. i., 352.

Sown March 21st. Fit for use July 12th.

6. *Laxton's Prolific Selected*.

This proved to be the true Laxton's Prolific Longpod (white-seeded).

Description.—See Proc. R. H. S. vol. iii. N.S., cli.7. *Unique* (Laxton), F. C. C., 1872.

This fully maintained the high place given to it in the trial of 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., cliii.

Sown March 21st. Fit for use June 22nd.

8. *Harbinger* (Laxton), F. C. C., 1872.

This, which proved the earliest of all in the trial of last year, was this year not so much in advance.

Description.—See Proc. R. H. S. vol. iii. N.S., clv.
Sown March 21st. Fit for use June 18th.

9. *Carter's Kentish Invicta*.

Description.—See Proc. R. H. S. vol. iii. N.S., clv.
Sown March 21st. Fit for use June 20th.

10. *William the First* (Laxton), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., cliii.
Sown March 21st. Fit for use June 21st.
This is the earliest Green Marrow.

11. *Laxton's Supreme*.

Description.—See Proc. R. H. S. vol. iii. N.S., cliv.
Sown March 21st. Fit for use July 1st.

12. *The Baron* (Laxton).

A hybrid Green Marrow raised by Mr. Laxton. Plant of moderately robust growth, not much branched. Height from 5 to 6 feet. Pods produced in pairs, from ten to twelve on a stem, very large, from 5 to 6 inches long, curved and pointed, of a fine deep green colour. Very much like Superlative in appearance, but more than a week earlier. They contain from ten to twelve large peas of a fine green colour. Ripe seed blue, indented.

Sown March 21st. Fit for use June 27th.

Awarded a *First-class Certificate*.

13. *Clipstone Hero* (Bowlby).

A somewhat taller and more robust form of Burbidge's Eclipse.

Description.—See Proc. R. H. S. vol. i., 362.

14. *Fillbasket* (Laxton), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., clix.
Sown March 21st. Fit for use July 3rd.

15. *Supplanter* (Laxton), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., clx.
Sown March 21st. Fit for use July 5th.

16. *Dwarf Green Wrinkled Marrow* (Veitch).

Plant very robust, much branched. Height about $2\frac{1}{2}$ feet. Foliage large, broad, bright green, glabrous, or destitute of the usual glaucous hue, being similar in this respect to Danecroft Rival. Pods large, broad, pale shining green, but rather rough. They contain from seven to eight large pale green peas, which are very sweet and of good quality. Ripe seed large, white, wrinkled.

Sown March 21st. Fit for use June 29th.

This is a perfectly distinct Pea. It appears, however, to be somewhat tender, as, although the plant grew well and flowered abundantly, but very few of the pods filled out, the produce being exceedingly small.

17. *Advancer* (McLean).

Description.—See Proc. R. H. S. vol. i., 370.

Sown March 21st. Fit for use June 26th.

18. *Robert Fenn* (Dean).

Synonym.—Dean's Dwarf Marrow.

Description.—See Proc. R. H. S. vol. iii. N.S., clxii.

Sown March 21st. Fit for use July 5th.

19. *Multum in Parvo Selected*.

This was no improvement on the true *Multum in Parvo*.

Description.—See Proc. R. H. S. vol. iii. N.S., clxix.

20. *Laxton's Gem* (Laxton).

Plant robust, branching. Height about 18 inches. Pods produced in pairs, from eight to ten on a stem, from 3 to $3\frac{1}{2}$ inches long, a good deal curved and pointed, well filled, containing from eight to nine good-sized peas of very excellent quality. Ripe seed green, wrinkled.

This was selected as an improvement on *Little Gem*, having larger pods, and being more prolific than that variety.

Sown March 21st. Fit for use June 23rd.

Awarded a *First-class Certificate*.

21. *Little Gem* (McLean).

Description.—See Proc. R. H. S. vol. iii. N.S., clxix.

Sown March 21st. Fit for use June 23rd.

22. *Carter's Premium Gem* (Carter).

This was considered an improvement on Multum in Parvo.

Sown March 21st. Fit for use June 23rd.

23. *Veitch's Perfection* (Veitch).

Description.—See Proc. R. H. S. vol. i., 375.

Sown March 21st. Fit for use July 14th.

24. *G. F. Wilson* (Carter), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N. S., clxxiii.

Sown March 21st. Fit for use July 3rd.

This fine Pea fully maintained the high character given to it in the trial of 1872.

25. *The Prince* (Selected) (Dean).

This was not considered to be any improvement on the old stock.

Description.—See Proc. R. H. S. vol. iii. N. S., clxiv.

26. *Omega* (Laxton), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., clxvii.

Sown March 21st. Fit for use July 18th.

27. *Dr. Hogg* (Laxton), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., clxvi.

Sown March 21st. Fit for use June 21st.

The earliest of the Ne Plus Ultra class of Wrinkled Peas.

28. *Alpha* (Laxton).

Description.—See Proc. R. H. S. vol. iii. N.S., clxviii.

Sown March 21st. Fit for use June 21st.

29. *Wrinkled Marrow from Russia* (Short) — *Bland's Defiance* (Bland).

These proved to be selections from Premier, but no improvement.

Description.—See Proc. R. H. S. vol. iii. N.S., clxiv.
Sown March 21st. Fit for use July 8th.

30. *Tall Green Wrinkled Marrow* (Veitch).

This proved identical with Culverwell's Prolific Marrow.
Description.—See Proc. R. H. S. vol. iii. N.S., clxxiii.
Sown March 21st. Fit for use July 6th.

31. *Ne Plus Ultra*.

Description.—See Proc. R. H. S. vol. iii. N.S., clxvi.
Sown March 21st. Fit for use July 5th.

32. *Huntingdonian*.

A fine form of Champion of England.
Description.—See Proc. R. H. S. vol. i., 371.

33. *James's Prolific Marrow* (James), F. C. C., 1872.

Description.—See Proc. R. H. S. vol. iii. N.S., clxv.
Sown March 21st. Fit for use July 6th.

34. *Dagmar* (Laxton).

Plant robust, branching. Height about 12 inches. Pods produced in pairs, full, rounded, curved, and pointed, of a pale green colour, from $3\frac{1}{2}$ to 4 inches long, and contain from seven to eight large peas of very fine quality. Very prolific. Ripe seed white, wrinkled.

Sown March 21st. Fit for use June 20th, at the same time as Sangster's No. 1.

A very fine early dwarf wrinkled Pea.

Awarded a *First-class Certificate*.

35. *The Shah* (Laxton).

Plant of the habit of Sangster's No. 1. Simple. Height about 3 feet. Pods produced singly, but abundantly, very full, rounded, almost straight or but very slightly curved, about 3 inches long, of a pale green colour, and contain from eight to nine very large peas, of very fine quality. Ripe seed white, wrinkled.

Sown March 21st. Fit for use June 20th, at the same time as Sangster's No. 1.

An exceedingly fine early prolific white wrinkled Pea.

Awarded a *First-class Certificate*.

36. *Marvel* (Laxton).

Plant of robust habit of growth, branching. Height 3 feet. Pods produced in pairs in great abundance, very large, from 4 to 4½ inches long, full, rounded, much curved and pointed, of a light green colour, and contain from nine to eleven very large peas, of very fine quality. Ripe seed white, wrinkled.

Sown March 21st. Fit for use July 2nd.

A remarkably handsome, large, and exceedingly productive white wrinkled Marrow.

Awarded a *First-class Certificate*.

37. *Challenger* (Dean)—*Sussex Hero* (Wood & Son)—*Wrinkled White* (Chamberlain).

These proved to be good stocks of British Queen.

38. *Stone's Australian Tall White Marrow*.

This proved to be the Tall White Mammoth.

XXII. A Classified Synonymic List of all the Known Crocuses, with their Native Countries, and References to the Works where they are Figured. By J. G. BAKER, F.L.S., Assistant Curator of the Kew Herbarium.

SUBGENUS 1. HOLOSTIGMA.—Style divided into three entire stigmas.

1. *Spring-Flowering Species*.1. *C. chrysanthus*, *Herbert*.—Roumelia and Asia Minor.

C. annulatus, var. *chrysanthus*, *Herbert*.

C. croceus, *K. Koch*.

C. sulphureus, *Griseb.* non *Ker*.

2. *C. moesiacus*, *Ker*.—Banat, Greece, Asia Minor.

C. vernus, *Curtis Bot. Mag.*, t. 45, non *All*.

C. luteus, *Lam. Red. Lil.*, t. 196; *Hayne Arzneg.* vi., t. 27;
Sturm Deutsch. Flora vii., t. 27; *Reich. Ic. Crit.*, t. 926;
Ic. Germ., t. 357.

C. floribundus, *Haworth*.

C. lagenæflorus, var. *luteus*, *Herbert*.

Var. 1. AUREUS.

C. aureus, Sibth. & Sm. Flor. Græc., t. 35; Eng. Bot. Suppl., t. 2646; Eng. Bot., edit. 3, t. 1498; Bot. Mag., t. 2986; Reich. Ic. Crit., t. 925; Reich. Ic. Germ., t. 357.

C. lagenæflorus, var., Salisb. Parad. Lond., t. 106.

C. lagenæflorus, Sabine Hort. Trans. vii., t. 11, fig. 2.

C. lagenæflorus, var. *luteus*, Herbert.

Var. 2. STELLARIS.

C. stellaris, Haworth Hort. Trans. i., p. 136, with figure.

C. lagenæflorus, var. *stellaris*, Herbert.

Var. 3. SULPHUREUS.

C. sulphureus, Ker, Bot. Mag., t. 938 & 1384; Sabine Hort. Trans. vii., t. 11, fig. 1; Reich. Ic. Crit., t. 927.

C. flavus, Haworth.

Var. 4. LACTEUS.

C. lacteus, Sabine Hort. Trans. vii., t. 11, fig. 3; Sweet Brit. Flow. Gard. ii., t. 194.

C. mæsiacus, var., Ker, Bot. Mag., t. 1111.

3. *C. gargaricus*, Herbert, Bot. Reg. xxxiii., t. 16, fig. 1.—Asia Minor.

C. Thirkeanus, K. Koch.

4. *C. susianus*, Ker, Bot. Mag., t. 652; Red. Lil., t. 293; Hayne Arzneg. vi., t. 28; Reich. Ic. Crit., t. 928; Reich. Ic. Germ., t. 358; Loud. Bulb. Plants, tab. 23, fig. 5.—Crimea.

C. revolutus, Haworth.

C. reticulatus, M. Bieb. Plant. Ross., t. 1, in part.

C. Rægnierianus, K. Koch.

Var. 1. IMMACULATUS, Herbert.—Constantinople.

Var. 2. ANCYRENSIS, Herbert.—Asia Minor.

5. *C. biflorus*, Miller, Bot. Mag., t. 845; Andr. Bot. Rep., t. 362; Red. Lil., t. 294; Reich. Exot., t. 37; Reich. Ic. Crit., t. 935-6; Reich. Ic. Germ., t. 356; Loud. Bulb. Plants, t. 23, fig. 3.—South Europe.

C. circumscissus, Haworth.

C. annulatus, var. *biflorus*, Herbert.

Var. 1. ARGENTEUS.—Central and Northern Italy.

C. argenteus, Sabine Hort. Trans. vii., tab. 11, fig. 5.

C. minimus, Bot. Mag., t. 2994, non DC.

C. præcox, Haworth, Eng. Bot. Suppl., t. 2645.

C. lineatus, Jan, Reich. Ic. Crit., t. 1259; Reich. Fl. Germ., t. 788-9.

Var. 2. PUSILLUS.—Southern Italy.

C. pusillus, Tenore Mem., t. 2; Ten. Fl. Nap., t. 206; Lodd. Bot. Cab., t. 1454; Bot. Reg., t. 1987; Sweet Flow. Gard., t. 106.

Var. 3. ADAMI.—Caucasus and Crimea.

C. Adami, Gay.

C. annulatus, var. *Adamicus*, Herbert, Bot. Mag., t. 3868.

Var. 4. WELDNI, Gay.—Dalmatia.

Var. 5. NUBIGENUS.—Asia Minor.

C. nubigena, Herbert.

C. annulatus, var *nubigena*, Herbert.

6. *C. versicolor*, Gawl., Bot. Mag., t. 1110; Sabine Hort. Trans. vii., t. 11, figs. 6-9; Loudon Bulb. Plants, t. 23, fig. 6.—South-west France.

C. fragrans, Haworth.

C. cretensis, Eugene.

? *C. Reinwardtii*, Reich. Ic. Crit., t. 238.

7. *C. suaveolens*, Bertol., Tenore Fl. Nap., t. 206; Bot. Mag., t. 3864; Sweet Flow. Gard. ii., t. 352.—South Italy.

8. *C. minimus*, DC., Red. Lil., t. 81; Reich. Ic. Crit., t. 941; Reich. Ic. Germ., t. 359.—Sardinia and Corsica.

C. insularis, Gay, Bot. Reg. xxix., t. 21.

C. corsicus, Vanucci.

C. nanus, DC.

9. *C. banaticus*, Heuffel, Reich. Ic. Germ., t. 361, non Gay.—Mountains of Hungary, Transylvania, and Croatia.

C. Heuffellii, Kornicke.

C. Heuffellianus, Herbert.

C. vittatus, Schlosser.

10. *C. vernus*, Allioni, Eng. Bot., t. 344; 3 edit., t. 1499; Jacq. Austr. v., t. 36; Red. Lil., t. 266; Reich. Exot., t. 22; Reich. Ic. Crit., t. 929 to 934; Reich. Ic. Germ., t. 355; Fl. Dan., t. 2042; Sabine Hort. Trans. vii., t. 11, fig. 11 to 19 (a set of garden varieties).—Central and Southern Europe, from France to the Crimea.

Var. 1. ALBIFLORUS.

C. albiflorus, Kit. Reich. Ic. Crit., t. 1255; Reich. Ic. Germ., t. 787.

- C. montanus*, Hoppe.
C. siculus, Tineo.
 Var. 2. *OBOVATUS*, Bot. Mag., t. 2240.
C. obovatus, Haworth.
C. vernus, var. *neapolitanus*, Gawl. Bot. Mag., t. 860.
 Var. 3. *NIVIGENUS*, Herbert.—Steppes of Odessa.
 Var. 4. *TOMMASINIANUS*.—Dalmatia.
C. Tommasinianus, Herbert.
 ? Var. 5. *NERVIFOLIUS*.
C. nervifolius, Reich. Ic. Crit., t. 942-3.
 11. *C. Sieberi*, Gay, Bot. Mag., t. 6036.—Greece, Crete, and Asia Minor.
C. nivalis, Bory & Chaub. Expl. Mor., t. 2, fig. 1; Bot. Reg. xxxiii., t. 4, fig. 2.
C. Sieberianus, Herbert.
C. sublimis, Herbert.
C. Sibthorpianus, Herbert.
 Var. 1. *ATTICUS*.—Greece.
C. atticus, Orphanides.
 Var. 2. *VELUCHENSIS*.—Greece and Transylvania.
C. veluchensis, Herbert, Bot. Reg. xxxiii., t. 4, fig. 3.
C. uniflorus, Schur.
 Var. 3. *EXIGUUS*.—Transylvania.
C. exiguus, Schur.
 ? *C. balcanensis*, Janka.*—Balkan.
 ? *C. thessalus*, Boiss. & Sprun.—Thessaly.
 ? *C. alatavicus*, Semen. & Regel.—Turkestan.
 12. *C. carpetanus*, Boiss. & Reut., Mem. Madrid iv., t. 4.—Spain.
 13. *C. reticulatus*, M. Bieb., Pl. Ross., t. 1 in part; Reich. Ic. Crit., t. 939-940; Reich. Ic. Germ., t. 356.—Caucasus, Asia Minor, Austria.
C. variegatus, Hoppe. & Hornsch. Tagebuch, t. 1; Sturm Deutsch. Flora xiii., t. 54.
C. reticulatus, var. *variegatus*, Herb.
C. micranthus, Boissier.
 Var. 1. *ALBICANS*, Herb., Bot. Reg. xxxiii., t. 16, fig. 2.
 Var. 2. *DALMATICUS*.—Dalmatia.

* Of the plants marked with a note of interrogation before the names I have not seen authentic specimens, and do not find anything definite in the descriptions to distinguish them from the species under which they are placed.

C. dalmaticus, Vis. Fl. Dalm. Suppl., t. 2.

Var ? 3. *ETRUSCUS*.—Tuscany.

C. etruscus, Parlatores.

2. *Autumn-Flowering Species.*

14. *C. sativus*, Linn., Lam. Ency., t. 30; Red. Lil., t. 173; Reich. Ic. Germ., t. 360; Eng. Bot., t. 343; Royle Him. Illust., t. 91, fig. 1; Loudon Bulb. Plant., t. xxiii., fig. 2.—Italy.
- C. Orsinii*, Parlatores.
- C. Haussknechtii*, Boissier.—Kurdistan.
- ? *C. intromissus*, Herbert.—Damascus.
15. *C. Cartwrightianus*, Herbert, Bot. Reg. xxx., t. 3, fig. 6; Bot. Reg. xxxi., t. 37, fig. 6-7; Moore Floral Mag., 1850, ii., p. 273, with figure.—Greece.
16. *C. Pallasii*, M. Bieb.—Crimea.
- C. Pallasianus*, Herbert, Bot. Reg. xxx., t. 3, fig. 2.
17. *C. Thomasii*, Tenore, Mem. Croc., t. 4; Ten. Fl. Nap., t. 204-5; Reich. Ic. Crit., t. 951.—South Italy.
- C. Thomasianus*, Herbert, Bot. Reg. xxx., t. 3, fig. 6.
18. *C. Visianicus*, Herbert.—Dalmatia.
- C. Pallasii*, Visiani, Reich. Ic. Germ., t. 360, non MB.
- ? *C. hybernus*, Fridvald.—Roumelia.
19. *C. hadriaticus*, Herbert, Bot. Reg. xxxiii., t. 16, fig. 7-9.—Albania and Ionian Islands.
20. *C. Cambessedesii*, Gay.—Majorca.
- C. Cambessedesianus*, Herb. Bot. Reg. xxxi., t. 37, fig. 4.
21. *C. lazicus*, Boissier.—Asia Minor.
22. *C. peloponnesiacus*, Orphan.—Greece.
23. *C. Kotschyanus*, K. Koch.—Mountains of Cilicia.
- C. zonatus*, J. Gay.
- ? *C. Karduchorum*, Kotschy.
24. *C. Scharojani*, Ruprecht, Regel Gartenfl., t. 578, fig. 2.—Western Caucasus, 6-7000 feet.

SUBGENUS 2. ODONTOSTIGMA.—Style divided into three stigmas, which are fringed or cut at the tip.

1. *Spring-Flowering Species.*

25. *C. Olivieri*, Gay, Bot. Mag., t. 6031.—Greece.
- C. lagenæflorus*, var. *Olivierianus*, Herbert.
- C. Aucheri*, Boiss.

26. **C. Suterianus**, *Herbert*.—Anatolia.
C. chrysanthus, *Herb. Bot. Reg.* xxxiii., t. 4, fig. 1.
27. **C. aleppicus**, *Baker*.—Aleppo.
28. **C. aerius** *Herbert*.—Mountains of Armenia, 6-7000 feet.
C. Sibthorpianus, var. *stauricus*, *Herbert*.
 Var. 1. *PULCHRICOLOR*, *Herb.*—Bithynia.
 ? *C. Pestalozzæ*, *Boiss*.
 ? *C. cyprius*, *Boiss. & Kotschy*.—Cyprus.
29. **C. Imperati**, *Tenore*, *Mem. Croc.*, t. 3.; *Ten. Fl. Nap.*, t. 206; *Reich. Ic. Crit.*, t. 937; *Bot. Reg.*, t. 1993; *Sweet Flow. Gard.* ii., t. 98.—South Italy.

2. Autumn-Flowering Species.

30. **C. longiflorus**, *Raff.*, *Caratt.*, t. 19, fig. 2; *Reich. Ic. Crit.*, t. 946; *Tenore Fl. Nap.*, t. 201; *Parl. Ic. Rar. Panorm.*, t. 2; *Bot. Reg.* xxx., t. 3, fig. 4.—Sicily, Calabria.
C. odoratus, *Biv. Bern. Stirp. Rar. Sic.* iii., t. 2.
C. serotinus, *Bertol. non Salisb.*
 Var. 1. *MELITENSIS*, *Herb.*, *Bot. Reg.* xxx., t. 3, fig. 5.—Malta.
31. **C. serotinus**, *Salisb.*, *Parad.*, t. 30; *Bot. Mag.* t. 1267; *Loud. Bulb. Plant.*, t. 23, fig. 4.—Portugal.
 Var. 1. *SALZMANNI*.—Tangiers.
C. Salzmanni, *Gay*, *Bot. Mag.*, t. 6000.
C. Salzmannianus, *Herbert*, *Bot. Reg.* xxxiii., t. 4, fig. 4.
C. tingitanus, *Herbert*.
32. **C. caspius**, *Fisch.*—South shore of the Caspian.
33. **C. vallicola**, *Herbert*, *Bot. Reg.* xxxiii., t. 16, fig. 3.—Mountains of Armenia.
C. Suwarrowianus, *K. Koch*.
34. **C. ochroleucus**, *Boiss. & Blanche*, *Bot. Mag.*, t. 5297.—Palestine.
35. **C. damascenus**, *Herbert*, *Bot. Reg.* xxxi., t. 37, fig. 1.—Damascus.
C. edulis, *Boiss. & Blanche*.

SUBGENUS 3. SCHIZOSTIGMA.—Style divided into three stigmas, each of which is again slit into numerous deep, slender, spreading lobes.

1. Spring-Flowering Species.

36. **C. vitellinus**, *Wahl.*—Palestine.

C. syriacus, Boiss. & Gaill. non Herbert.

Var. 1. *BALANSÆ*.—Smyrna.

C. Balansæ, J. Gay.

37. *C. syriacus*, Herbert.—Aleppo.

38. *C. Fleischeri*, Gay.—Asia Minor.

C. Fleischerianus, Herbert.

C. smyrnensis, Poech.

C. candidus, "Clarke" Boiss.

C. penicillatus, Steudel.

39. *C. hyemalis*, Boiss. & Blanche.—Palestine.

Var. 1. *GAILLARDOTII*, Boiss.—Anti-Lebanon range.

2. Autumn-Flowering Species.

40. *C. Clusii*, Gay.—Portugal.

C. Clusianus, Herbert, Bot. Reg. xxxi., t. 37, fig. 8.

C. autumnalis var. *multifidus*, Brotero Phyl. Lus., t. 94.

41. *C. Boryi*, Gay, Bory & Chaub. Expl. Moree, t. 3; Moore Floral Mag., 1850, ii., p. 273, with figure.—Greece and Ionian Islands.

C. ionicus, Herbert, Bot. Reg. xxxiii., t. 16, fig. 10.

C. veneris, Tappeiner.

Var. 1. *LÆVIGATUS*.—Greece.

C. lævigatus, Bory & Chaub. Expl. Moree, t. 2.

Var. 2. *TOURNEFORTII*.—Greek Archipelago.

C. Tourneforti, Gay.

C. Tournefortianus, Herbert, Bot. Reg. xxxi., t. 37, fig. 3.

Var. 3. *ORPHANIDIS*.—Greece.

C. Orphanidis, Hook. fil. Bot. Mag., t. 5776.

? *C. parvulus*, Herbert.

42. *C. cancellatus*, Herbert, Bot. Reg. 37, t. 16, fig. 4.—
Ionian Isles, Greece, Asia Minor.

C. nudiflorus, Sibth. & Smith.

C. Schimperii, J. Gay.

C. Spruneri, Boiss. & Held.

C. dianthus, K. Koch.

C. Mazziaricus, Herbert, Bot. Reg. xxxiii., t. 16, fig. 5-6.

C. pylarum, J. Gay.

C. cilicius, Kotschy.

43. *C. medius*, Balbis, Bot. Reg. xxxi., t. 37, fig. 5; Moggridge
Cont. Mentone, t. 20.—Nice, Piedmont.

44. *C. nudiflorus*, Smith, Eng. Bot., t. 491; 3 edit., t. 1500;

Bact. Brit. Plants, t. 137.—Pyrenees, Spain, Central France, and naturalised in England.

C. pyrenæus, (Parkinson) Herbert.

C. multifidus, Ramond Bull. Phil., 1800, t. 8.

C. speciosus, Wils. Eng. Bot. Supp., t. 2752, non MB.

Var. 1. *ASTURICUS*.—North Spain.

C. asturicus, Herbert.

45. *C. speciosus*, *M. Bieb.*, Cent. Ross., t. 71; Bot. Mag., t. 3861; Regel Gartenfl., t. 379; Bot. Reg. xxv., t. 40; Loud. Bulb. Plants., t. 23, fig. 1.—Hungary, Transylvania, Crimea, Caucasus.

C. multifidus, Reich. Ic. Crit., t. 947, non Ramond.

46. *C. pulchellus*, *Herbert*, Bot. Reg., xxx., t. 3; Moore Floral Mag., 1850, ii., p. 273, with figure.—Turkey in Europe, Greece.

47. *C. byzantinus*, (Parkinson) Ker, Bot. Mag., t. 1111; Bot. Reg. xxxi., t. 37, fig. 2; xxxiii., t. 4, fig. 5.—Banat, Transylvania, Wallachia.

C. iridiflorus, Heuffel, Reich. Ic. Germ., t. 361.

C. banaticus, Gay non Heuffel.

C. speciosus, Reich. Ic. Crit., t. 948 non MB.

C. Herbertianus, Kornicke.

Crociris iridiflora, Schur.

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THE numbers refer to the species. The names in italics are those adopted for the plants admitted as good species. The others are varieties or synonyms, or plants respecting which further information is wanted.

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XXIII. Meteorological Observations taken at the Royal Horticultural Society's Gardens, Chiswick, by W. SPINKS. Reduced by R. STRACHAN, Meteorological Office.

THE readings of the barometer and thermometer are all corrected for instrumental errors (which have been ascertained at the Kew Observatory), and those of the barometer are reduced to the temperature of 32° Fah., and to mean sea-level.

The rain gauge is 25 feet above sea-level.

The temperature of evaporation is regularly observed, but is not given here. It has been considered preferable to give the dew-point, which has been calculated from this observation by means of Glaisher's factors.

The figures denoting the estimated force of the wind signify as follows:—1, light air; 2, light breeze; 3, gentle breeze; 4, moderate breeze; 5, fresh breeze; 6, strong breeze; 7, moderate gale; 8, fresh gale; 9, strong gale; 10, whole gale; 11, storm; 12, hurricane.

The notations of weather are, for brevity, expressed by letters, which signify as follows:—b, blue sky; c, detached clouds; o, overcast; f, fog; m, mist; r, rain; h, hail; s, snow; d, drizzle; p, passing showers; q, squalls; t, thunder; l, lightning. A letter repeated denotes intensity.

[A reduction of these observations has been published by Mr. Glaisher in the Registrar-General's Report, but the results given by him are different, probably owing to the corrections not being applied to each observation, but to the monthly means.—Eds.]

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	9 a.m. 3 p.m. 9 p.m.
1	In.							In.			
2	29.971	46.4	40.1	57.0	40.0	95.0	38.0		WSW	3	b b b
3	30.245	50.3	42.0	60.4	33.0	117.0	29.5		WNW	2	b b b
4	30.274	46.0	42.8	61.1	34.0	114.5	28.5		SW	3	o d o b
5	30.220	50.8	41.8	52.4	35.5	86.0	31.5	0.07	WSW	2	o o d
6	29.816	52.3	46.2	56.8	49.0	86.0	31.5		WNW	3	o b
7	29.646	44.5	35.8	55.0	39.0	77.0	36.0	0.17	NW	4	o r
8	29.802	43.5	36.0	53.0	36.0	73.5	35.0	0.02	NNW	5	b b
9	30.073	41.0	37.5	51.0	36.2	101.0	33.0	0.13	E	5	o c
10	30.300	43.0	34.2	50.0	39.5	103.5	39.0		NNE	6	b c
11	30.330	43.0	38.0	49.0	33.5	65.0	31.0		NNE	5	b b
12	30.118	43.5	38.0	50.4	32.5	93.0	29.0		NNE	5	o o
13	30.092	43.5	39.0	48.4	40.0	62.0	40.5		NW	3	o o
14	30.025	44.5	38.0	49.4	41.0	62.0	40.0		SE	3	o b
15	29.904	50.3	44.0	51.0	38.5	73.0	34.0		E	2	o c
16	29.711	58.3	49.3	68.4	39.5	119.0	38.0	0.06	NE	0	b c o
17	29.604	63.2	50.2	75.4	63.0	121.0	45.0	0.01	SE	2	o c o c pl
18	29.532	54.8	47.0	76.0	45.0	134.0	44.0		NNE	3	o c
19	29.712	50.8	47.0	67.0	46.0	116.0	47.0		NE	2	b c
20	30.021	50.3	40.4	64.0	38.5	116.0	35.5		NE	4	b b
21	30.155	54.3	40.0	63.4	35.5	118.5	29.5		NE	4	b b
22	30.206	55.3	43.5	63.4	41.0	116.0	38.5		NE	5	o c
23	30.043	43.5	40.2	62.4	37.0	110.0	33.0		NNE	2	o o
24	29.936	42.5	33.6	57.0	34.5	112.0	32.0		N	4	b c o
25	30.148	42.5	31.4	51.0	31.0	114.5	25.0	0.06	ENE	3	o r s
26	30.280	42.0	32.0	50.4	27.5	111.0	23.0		NNE	4	o q s
27	30.970	43.5	41.0	50.6	34.5	97.0	31.0	0.07	NNW	5	c c
28	30.166	49.0	40.7	49.4	36.0	99.5	31.0		NW	2	o p
29	30.071	51.3	44.4	55.4	45.0	119.0	41.5	0.07	NNE	2	b c s
30	30.190	52.3	44.5	57.4	34.5	103.5	30.0		WNW	4	o o
Means	30.016	48.1	40.5	56.9	37.8	101.0	34.1	0.66	N 10° E	1.9	—

The pressure and temperature correspond nearly with the averages of former years, the winds were more frequently from the north than usual, and the rainfall was only half the average quantity.

MAY, 1873.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL In.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	9 a.m. 3 p.m. 9 p.m.
1	In.										
2	30.122	59.7	51.4	61.4	51.7	87.5	46.7	...	WNW	4	b o c
3	30.049	57.7	47.4	68.4	35.2	128.0	32.0	...	WNW	2	b o c
4	29.712	53.7	44.1	67.0	41.7	136.7	36.5	...	NW	4	b o c
5	29.761	45.3	41.2	61.0	40.7	130.0	38.0	0.14	NW	1	b o c
6	29.548	47.5	45.3	57.0	42.2	129.0	40.0	0.09	SE	2	b o c
7	29.542	47.5	42.1	54.0	40.2	81.0	35.0	...	W	2	b o c
8	29.591	50.3	46.4	57.4	39.2	124.5	34.0	0.44	SW	2	b o c
9	29.556	51.8	47.0	58.4	44.4	113.0	41.5	0.07	NW	1	b o c
10	29.983	54.3	47.6	60.4	41.7	112.5	37.0	0.08	W	3	b o c
11	30.146	52.8	48.0	61.0	34.6	129.0	32.0	...	SW	0	b o c
12	30.148	62.2	55.0	64.0	50.2	120.5	49.0	...	WNW	4	b o c
13	30.212	58.7	52.5	69.4	46.7	133.0	44.0	...	W	2	b o c
14	30.184	54.3	42.7	74.4	40.7	135.0	36.0	...	NNE	1	b o c
15	30.233	47.3	41.2	63.0	31.6	137.0	26.5	...	NNE	2	b o c
16	30.110	46.9	41.6	56.4	38.7	97.5	32.0	...	NNE	2	b o c
17	29.997	50.8	45.9	58.4	37.2	101.0	32.0	...	ESE	4	b o c
18	29.679	52.8	46.0	56.4	43.2	118.5	41.0	0.10	E	4	b o c
19	29.612	48.3	46.4	59.4	45.7	121.0	46.0	...	NNE	4	b o c
20	29.922	45.5	42.4	52.4	42.2	121.0	42.0	...	NNE	5	b o c
21	30.342	50.8	42.8	53.4	28.1	92.0	22.0	...	NNW	2	b o c
22	30.124	49.0	46.9	64.0	44.7	131.5	39.5	0.16	S	3	b o c
23	29.966	55.7	53.1	56.4	48.7	79.0	49.5	0.08	SW	2	b o c
24	29.769	54.3	54.3	67.0	43.7	134.0	38.5	...	S	5	b o c
25	30.118	53.3	46.5	67.4	32.6	134.0	30.0	...	NW	4	b o c
26	30.255	56.7	49.2	64.4	36.2	134.0	30.0	0.02	NNE	2	b o c
27	29.995	59.2	53.7	69.6	47.2	146.5	42.0	0.10	SE	1	b o c
28	29.831	53.8	51.0	71.6	46.2	140.0	39.5	...	SW	5	b o c
29	30.211	52.3	43.4	66.0	42.2	136.2	38.0	0.05	NNE	6	b o c
30	30.410	55.3	47.7	63.0	40.2	118.5	34.0	...	NNE	1	b o c
31	30.286	52.8	48.0	65.4	47.7	148.5	47.0	0.06	NNE	2	b o c
Means	30.190	53.3	47.5	65.4	37.7	141.0	31.0	...	NW	4	b o c
	29.988	51.7	47.0	62.3	41.4	122.1	37.5	1.39	N 35° W	0.9	—

The pressure was about the average, the temperature a little below the average, the wind more northerly than usual, and the rainfall below the average.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at				
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max in sun.	Min. on grass.		Direction.	Force.	9 a.m.	3 p.m.	9 p.m.
1	In. 29.894	51.3	49.5	66.1	45.2	142.0	39.5		N	6	In.	o	o
2	30.084	59.2	54.7	60.4	48.2	104.0	43.5		NE	6	0.12	b c m	o
3	29.839	60.7	58.1	67.4	49.2	131.0	46.0		SE	5	0.29	c m	o
4	29.875	65.2	60.8	68.9	45.2	127.0	40.0		E	2	...	c m	o r
5	29.831	61.2	58.6	74.4	57.2	137.0	57.0		N	2	0.25	o	o
6	30.029	54.8	53.0	72.0	52.2	129.0	50.0		NNE	6	...	o	b
7	30.255	56.2	50.8	58.0	37.7	79.0	31.0		NNE	5	...	o	o
8	30.220	56.7	52.1	68.4	44.7	131.5	37.5		NNW	2	...	o	b
9	30.483	60.2	54.7	68.0	43.7	134.0	37.0		W	2	...	o	o
10	29.807	59.2	53.7	71.4	49.2	135.5	42.5		SW	4	0.07	o	o r
11	29.727	59.2	54.7	63.4	50.7	99.5	53.0		W	2	...	o c	b
12	29.581	60.2	54.7	68.4	40.7	132.0	36.5		SE	6	...	c	o
13	29.590	64.2	53.4	67.4	46.7	114.5	40.5		NNW	2	...	o c	o
14	29.780	61.2	54.0	71.0	45.2	130.0	38.5		SSW	2	0.08	o c	o d
15	29.835	59.2	53.7	67.4	51.2	140.7	49.5		W	2	0.02	o c	o
16	29.936	61.2	53.0	70.4	52.2	143.0	48.0		WNW	4	...	b c	b
17	30.013	62.2	62.2	74.4	41.7	154.0	39.0		SSE	1	0.73	b c	o
18	30.018	57.2	56.2	75.4	53.2	153.0	47.0		NNE	2	0.26	o r	c
19	30.128	64.2	58.9	74.4	48.2	142.0	42.0		SSW	6	...	o	o
20	30.227	60.7	56.2	68.6	56.7	126.0	56.5		W	2	...	o	b
21	30.266	65.2	60.8	71.4	51.2	143.0	45.5		SSW	4	...	o	c
22	30.143	68.2	55.8	72.4	52.7	142.0	47.0		S	2	0.01	b	b c
23	30.086	64.7	55.8	78.4	52.2	141.0	49.0		W	2	...	b c	c b
24	30.696	61.7	50.7	74.0	46.2	146.5	41.5		SSW	4	...	o	b
25	29.928	67.7	60.7	65.4	57.2	102.0	52.5		W	6	...	c	c
26	30.226	62.2	54.0	68.0	45.7	108.5	38.0		NW	2	...	b	c
27	30.143	67.2	56.6	69.4	55.2	129.5	50.0		SW	4	...	o	c
28	30.071	60.7	52.5	77.0	57.7	140.0	56.0		SW	4	...	o	b c
29	29.987	70.2	58.2	76.0	48.2	146.0	42.0		SE	2	0.37	b c m	o r
30	29.760	59.2	57.3	80.4	58.2	146.0	48.0		WSW	2	0.40	o r	o r
Means	29.982	61.4	55.5	70.3	49.5	131.0	44.8		S 73° W	0.6	2.60	—	—

The pressure was below and the temperature a little above the average of former years. There was more southing than usual in the winds, and the rainfall exceeded the average.

JULY, 1873.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force	
1	In. 29.988	61.0	55.8	63.5	53.0	89.0	49.5	In.	NNW	4	b
2	30.038	67.0	61.1	74.5	50.5	141.0	47.0	...	SW	2	o
3	29.939	64.0	62.6	72.5	57.5	138.5	56.0	0.02	SE	3	o
4	29.736	63.0	57.0	75.5	56.0	138.5	54.0	0.12	SSW	5	b
5	29.837	60.0	59.0	69.0	44.5	136.0	39.5	0.06	SE	3	b
6	29.900	60.0	54.8	68.5	55.0	114.0	54.0	0.42	NNW	5	b
7	30.118	66.0	61.0	72.5	46.5	144.0	43.0	...	S	3	b
8	30.114	67.0	59.3	79.0	46.0	148.0	43.0	...	SSW	2	c
9	30.158	68.0	59.8	80.5	52.0	151.0	46.5	...	WNW	3	c
10	29.927	64.0	60.7	73.5	55.0	146.5	51.0	...	SSW	6	o
11	29.877	63.0	59.7	66.0	52.5	146.0	47.5	...	SSW	3	c
12	29.782	61.0	52.0	70.5	49.5	129.5	46.0	...	SSW	3	o
13	29.680	63.0	54.1	71.0	51.0	144.0	44.0	...	SE	5	o
14	29.701	63.0	57.8	65.0	49.0	92.0	44.0	1.04	SSW	5	o
15	29.770	60.0	55.7	69.0	50.0	142.0	44.5	...	SSW	5	o
16	30.063	63.0	57.8	68.5	49.5	136.0	47.0	0.18	NW	3	b
17	30.107	64.0	62.6	71.5	52.0	144.0	50.5	0.08	SSW	3	b
18	29.904	67.0	63.3	73.5	59.0	121.0	56.0	...	SSW	6	o
19	30.188	62.0	55.0	71.0	43.5	134.5	38.0	0.04	SW	2	b
20	30.182	65.0	58.0	70.0	51.5	134.0	47.5	0.15	SSW	2	b
21	30.200	73.0	59.8	82.5	53.0	152.0	49.0	...	SE	1	b
22	30.045	79.0	64.2	87.0	60.0	154.0	56.0	...	SE	2	b
23	29.910	78.0	66.5	89.0	61.0	151.0	56.5	...	S	2	b
24	30.069	65.0	54.5	84.0	52.0	149.0	49.0	...	SW	2	b
25	30.054	70.0	56.2	78.0	55.5	151.0	51.0	...	SE	2	b
26	29.965	63.0	57.8	80.5	56.0	149.0	52.0	...	W	4	o
27	30.004	65.0	54.4	74.5	52.0	144.0	45.0	0.14	SW	5	c
28	30.038	65.0	54.4	72.5	48.5	139.0	43.0	...	SW	5	b
29	29.980	69.0	55.5	75.5	44.0	138.0	39.0	...	SSE	1	o
30	30.004	71.0	60.3	78.5	57.5	150.0	51.0	...	WSW	5	b
31	30.020	69.0	60.3	80.0	60.0	147.0	56.5	...	SSW	5	b
Means	29.979	65.8	58.4	74.4	52.4	138.5	48.2	2.25	S3 W	2.2	—

The Potato Disease made its appearance on the 29th. All the meteorological elements for this month exhibit a close accordance with their normal values.

APRIL 3, 1872. .

FLORAL COMMITTEE.

First-class Certificates were given to Messrs. Veitch for *Oncidium Cræsus* ; to Mr. Bull for *Zalacca edulis* and *Dracana metallica* ; and to Messrs F. and A. Smith for Azalea, Beauty of Surrey, a superior white. A Cultural Commendation was given for *Masdevallia Lindenii* to Mr. J. Linden, who also sent *Vriesia corallina* and *Tillandsia Lindenii vera*. Mr. Ware sent a superb variety of *Iris iberica*, while a new *Oncidium* came from the Society's collection.

SPRING SHOW.

Prizes for Odontoglossums were awarded to Mr. J. Ward, gardener to F. G. Wilkins, Esq., Mr. Bull, and Mr. J. Linden ; for Cyclamens, to Mr. Goddard, gardener to H. Little, Esq., and Mr. R. Clarke ; for Cinerarias, to Mr. R. Marcham, gardener to E. Oates, Esq., Messrs. Dobson and Sons, and Mr. James, gardener to F. W. Watson, Esq. Mr. Baxter, gardener to C. Kieser, Esq., was the only exhibitor of Amaryllis, and also sent some remarkable seedlings. One of the most interesting features of the Show was the fine group of Clematis from Mr. Charles Noble, while Roses and Orchids were well represented, and three boxes of terrestrial Orchids came from the Comte de Paris.

FRUIT COMMITTEE.

Cultural Commendations were awarded to Dr. Moore, of Glasnevin, for a fruit of the Chocolate Plant ; to Mr. C. Baldwin, gardener to B. Drew, Esq., for six very handsome Cucumbers ; and to Mr. Woodham, gardener to H. D. Pochin, Esq., for Keens' Seedling Strawberries. A First-class Certificate was given to M. A. de Biseau d'Hauteville for a seedling Pear named Beurré de

Biseau. Messrs. Stuart and Mein sent splendid specimens, blanched under boxes or Seakale pots, of their improved Dandelion, which ought to be more cultivated for spring salads. Two bunches of Lady Downe's Grapes, cut March 30, were not remarkable in point of flavour. Mr. Dodds, of Ashton Court, sent a simple contrivance for preserving cut Grapes.

SCIENTIFIC COMMITTEE.

J. H. GILBERT, Ph.D., F.R.S., in the Chair.

The Chairman made a communication with respect to the Coorongite, or Australian Caoutchouc. Like Elaterite, it is probably a mineral in admixture with an oxidised substance. Considerable difference in the ultimate composition of different specimens may therefore be expected.

Dr. Masters described a flower of a Fuchsia in which there was petalody of the stamens; and the ovary, from arrest of development, was superior instead of inferior.

Professor Thiselton Dyer read a translation of a paper by Bousingatul, "On the Production of Honey-Dew" (see Journ. N.S., vol. iv., pp. 1—7).

Prof. Thiselton Dyer read an extract from a letter from G. Gulliver, Esq. F.R.S., to the effect that succulent plants, contrary to what might perhaps have been supposed, are not more prone to the production of raphides than other plants. He had in vain examined our succulent seaside plants for raphides. He had looked for them in *Chenopodiaceæ*, *Brassicaceæ*, and *Crithmum*.

GENERAL MEETING.

J. RUSSELL REEVES, Esq., F.R.S., in the Chair.

Mr. Marshall commented on a distinct form of *Odontoglossum Andersonianum*, remarking that these hybrids had not been named botanically according to their various peculiarities, as there were more hybrids of the same origin.

Professor Thiselton Dyer directed attention to some flowering branches of fruit-trees from Chiswick, to show the serious effects of the frost of the previous week. The interesting point was the effect produced when the flowers were in

bud; for, though they subsequently opened, the carpels were killed. In Pears especially, not only were the carpels blackened, but also the anthers and the disc on which they were inserted.

APRIL 17, 1872.

FLORAL COMMITTEE.

A Silver Flora Medal was awarded to O. O. Wrigley, Esq., for a plant of *Odontoglossum Phalaenopsis* having nearly seventy flowers fully expanded. First-class Certificates were given to Messrs. Ivery for the dwarf *Hedera Helix conglomerata*, for *Polystichum angulare confluens variegatum*, and *P. a. proliferum Henleyæ*; to Messrs. Veitch for *Croton lacteum*; to Mr. B. S. Williams for *Rhopala elegantissima*, Hort.; to Messrs. Rollisson for *Erica Neitneriana*; and to M. Louis van Houtte for *Azalea indica*-J. G. Veitch, S. Rucker, and Marie van Houtte. A Second-class was also given for another variety, Comtesse Eugénie de Kerchove. A Cultural Commendation was given to Mr. J. Linden for several *Odontoglossums*.

AZALEA AND AURICULA SHOW.

Messrs. Lane were first for Azaleas, and Mr. Turner second. Messrs. Lane were alone with forced Rhododendrons in pots and cut trusses. Messrs. Turner were first for Auriculas, and Mr. James, gardener to W. F. Watson, Esq., second. In the Amateur Class the Rev. H. H. Dombrain was first, and Mr. James second. Mr. Turner sent the best Alpine or Fancy Auriculas, Mr. James second, and Mr. Goddard third.

The Metropolitan Floral Society's Prizes were awarded to the Rev. H. H. Dombrain, Mr. James, and Mr. Goddard for the six best Show Auriculas. The best green-edged were from Mr. Turner, the Rev. H. H. Dombrain, and Mr. James, who, in the same order, exhibited in the grey-edged class. Mr. Turner was first for a white-edged variety, Mr. Dombrain and Mr. James following. The best self was Spalding's Metropolitan from Mr. Dombrain,

Campbell's Pizarro from Mr. Turner second. Mr. James and Mr. H. Hooper staged the best Show Pansies, and Mr. Ware sent the best collection of hardy spring flowers. A Cultural Commendation was given to Mr. G. Bland, gardener to the Earl of Kilmorey, for *Anthurium Scherzerianum* with fifteen spathes.

FRUIT COMMITTEE.

A Cultural Commendation was given to J. B. Fernyhough, Esq., for a seedling plant of the Avocado Pear (*Persea gratissima*), grown in an ordinary Hyacinth-glass filled with water. It was raised from a seed taken from the fruit exhibited the previous September.

SCIENTIFIC COMMITTEE.

ANDREW MURRAY, Esq., F.L.S., in the Chair.

Dr. Welwitsch made a communication on some ornamental plants from Angola which it was desirable to introduce into horticulture, and exhibited specimens. A new species of *Maranta* was remarkable for its unsymmetrical leaves, elliptical on one side, oblong on the other, and white beneath, except a marginal band on the elliptical side. A scandent species of *Phrynium* was a remarkable exception to the scitamineous habit; its fruit also was curiously three-sided. It was suggested that this was a plant which, like some Indian species of *Combretum* and an *Equisetum*, climbs when it gets an opportunity. A variety of *Musa sapientum* possessed foliage of a blood-red colour. Dr. Welwitsch also exhibited seeds of *M. ventricosa*, Welw., a near ally of *M. Ensete*. A trifoliate species of *Gardenia*, about eight feet high, with flowers of the richest orange, produced wood resembling that of Box; the natives hung up branches of it as a charm against lightning. Two species of *Mussanda* were shown, one of which (*M. splendida*, Welw.) was a climber, easy of propagation, and with red sepaline lobes. *Listrostachys Welwitschii*, Rehb. f., was a remarkable exception to its epiphytal allies in habit. This grew upon the bare rock, spreading its branching roots upon the scanty soil.

Mr. Berkeley suggested that the peculiarities of the leaves of the *Maranta* were due to the convolute vernation.

Professor Thiselton Dyer stated that a very similar *Phrynium*, with weak, scrambling stems extending to twenty feet, is known from Upper Guinea.

A note was read from Dr. Boswell-Syme, "On the Fertilisation of Grasses" (Journ. N.S., iv., pp. 7-8).

Mr. McLachlan stated that the flowers of *Juncaceæ* were visited by insects.

A further note from Dr. Boswell-Syme stated that at Balmuto a Spanish Chestnut never fruits. The styles are apparently perfect, but the anthers are not developed from want of heat. At Culross, twenty miles to the west, by the Forth, which is much warmer, fruit is ripened in all but unfavourable years.

Mr. Berkeley laid before the Committee specimens of Cinchona bark brought from the Nilghiris by Dr. Thomson, showing the rapid development of new bark in places from which the old bark had been previously stripped off, the exposed surface being protected from the action of the atmosphere by a covering of moss. Fifteen months is sufficient to reproduce bark fit for commercial purposes.

GENERAL MEETING.

J. BATEMAN, Esq., F.R.S., in the Chair.

Mr. Berkeley remarked that the diseased Peach-trees, which have lately been brought several times under the notice of the Committee, had been affected partly by climatic conditions and partly by the bad state of their roots. The celebrated tree at Chatsworth, which had greatly declined, was effectually restored by supplying entirely new soil. As regarded some diseased shoots before the meeting, a specimen of the soil, consisting greatly of Beech-mast covered with fungous spawn, was a sufficient indication of the cause. It was, however, impossible always to assign the cause. Two seedling Figs raised by himself and Dr. Hogg were both affected by a similar canker. Specimens of Cinchona bark were sent by Dr. Thomson from the Nilghiris, where the trees were allowed to grow three years before the bark was stripped off, a portion of the old bark being left, which caused the young bark to grow freely and well.

Prof. Thiselton Dyer made some remarks on Dr. Welwitsch's speci-

mens laid before the Scientific Committee, showing the important help which botanists could give by indicating plants fit for horticulture. Ceylon, for example, contained a *Gordonia* quite unknown in Europe, except from dried specimens, which has flowers nearly four inches in diameter.

MAY 1, 1872.

FLORAL COMMITTEE.

First-class Certificates were awarded to Mr. J. Linden for *Odontoglossum brevifolium*; to Messrs. Veitch for *Pentstemon Menziesii*, var. *Robinsoni*; to Messrs. Rollisson for *Dracena lentiginosa*; to Mr. B. S. Williams for *Zamia cycadæfolia*; to Mr. Croucher for *Echinocactus Mirbelii*; to Messrs. Henderson for *Bouvardia longifolia flammea*; to Messrs. Ivery for *Azalea indica*-Fanny Ivery; to Mr. Turner for Alpine Auriculas, Mercury and Colonel Scott; and to Mr. Hooper, Bath, for Pansies, Crimson Beauty, Mrs. Eyles, and Prince of Wales. A Cultural Commendation was awarded to Mr. Green for an interesting group of plants, amongst which were several species of *Calochortus*; to Messrs. Veitch for varieties of *Odontoglossum Alexandræ*; to J. Russell, Esq., for cut Orchids; and to Mr. Baines for magnificent specimens of Sarracenias. Mr. Baines attributed the splendid state of the plants to their being kept only moderately moist to prevent rotting, while they require previously a constant supply of water during the period of growth, but not from a pan placed under them. *S. Drummondii alba* must not be potted when the other forms are, in early spring, but in August, when all the old soil should be removed and replaced with the best fibrous peat, sphagnum, and sand. The Committee thought that they deserved a Silver Flora Medal.

ROSE AND AZALEA SHOW.

The Prizes in the Rose Classes were obtained as follows:—Mr. Turner and Messrs. Paul for nine; Messrs. Veitch for six. In the Amateur Class the best came from Mr. E. Ellis, gardener to J. Galsworthy, Esq.; Mr. Baxter, and Mr. J. James. In Azaleas

Messrs. Lane were first, Mr. F. Hill, gardener to H. Taylor, Esq., second, and Mr. Turner third. The First Prize for three, confined to Amateurs who had not previously taken the Society's Prize for Azaleas, was gained by Mr. F. Hill; Mr. James was second, and Mr. J. Herrington third. For Auriculas Mr. Turner had the best twelve show varieties; the Rev. H. H. Dombrian the best six amongst Amateurs, and Mr. James was second, who also staged the best Calceolarias. Mr. Denning was first with Orchids, Mr. Bull second, and Mr. G. Wheeler third. Extra Prizes were awarded to Messrs. Veitch for Roses in pots, Japanese Maples, and Spiræas; to Mr. Noble for new varieties of Clematis, grouped with *Spiræa palmata*; to Mr. Turner for Roses; to Mr. B. S. Williams for fine-foliaged and flowering plants; to Mr. Ware for hardy spring plants; to Mr. W. Paul for Maréchal Niel and other cut Roses; to Mr. Denning for Orchids; and to Messrs. Standish for *Eucharis amazonica*.

FRUIT COMMITTEE.

A First-class Certificate was awarded to Mr. F. Dancer for Connover's Colossal Asparagus, a very fine variety which is excellent when cooked. A Cultural Commendation was voted to Mr. Stevens, gardener to the Duke of Sutherland, for Black Circassian and Elton Cherries; to Mr. D. M'Kellar, gardener to C. Magniac, Esq., for Marguerite Strawberries; to Mr. Hepper, gardener to E. D. Lee, Esq., for Dr. Hogg Strawberries; to Mr. J. Tegg, gardener to J. Walter, Esq., for Violette and Brown Turkey Figs and Grapes; and to Messrs. Wright for Black Hamburg Grapes.

SCIENTIFIC COMMITTEE.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Mr. Berkeley reported, on the authority of Dr. Thwaites, that the Coffee Fungus in Ceylon was dying out. Mr. Berkeley also exhibited Peach-shoots "gumming," and repeated his oft-expressed opinion, that the disease in question is due to alternations of temperature, and especially to the contact of cold water. The circular holes in the leaves he attributed to drops

of water, acting like burning lenses, or possibly by chilling the tissues.

The Chairman expressed his opinion that the holes in question were produced by insect-puncture (Thrips?), and a consequent unequal contraction of the tissues of the leaf, ultimately resulting in the death of a circular portion of the leaf, and by its falling out leaving a hole as if punched out.

The Chairman also showed a remarkable dwarf variety of *Cupressus macrocarpa*, about 4 inches high, and as many through. The plant, which was nine years old, had been obtained from seed by Messrs. Garraway, of Bristol. Some doubt was expressed as to its belonging to *C. macrocarpa* at all; in any case it is a very remarkable plant, analogous in habit to the Clanbrasilian Fir.

The Chairman also exhibited bulbs of *Amaryllis* in a decayed state, and partially eaten by the larva of a Dipterous insect, *Eristalis intricarius*, which it is surmised might have been introduced with liquid manure.

Mr. Miers exhibited specimens of a new and apparently valuable fibre, obtained from a Brazilian climbing plant with opposite leaves. The fibre appeared so abundant and so good that further particulars were requested.

Prof. Thiselton Dyer communicated an additional note with respect to Honey-Dew (Journ. N. S., vol. iv., pp. 6-7).

GENERAL MEETING.

JAMES BATEMAN, Esq., F.R.S., in the Chair.

Mr. Marshall spoke very highly of Mr. Peacock's collection of succulent plants as most worthy of inspection.

In allusion to the poisoning of a clergyman in Norfolk by suspicious Mushrooms, Mr. Berkeley advised amateurs to exercise very great caution before they ate doubtful kinds.

Mr. Barr's splendid double *Narcissi* were obtained by deferring the planting of the bulbs till January.

Prof. Thiselton Dyer called attention to the traces of tints colourous with those of the flowers in the foliage of *Cinerarias*. This was a matter of some theoretic interest, because it seemed to show that the colours of flowers were produced by a process possibly of oxidation from elaborated matters, such as already existed in the foliage. It was known that, while deoxidation took place in the leaves, oxida-

tion was the rule in flowers ; perhaps it also took place in the hairs with which the under-surface of the *Cineraria* leaves were clothed, and in which the colour seemed to reside. A French chemist, Persoz, had grown plants of *Impatiens* in indigotic acid, and had found that the dye in the leaves was deoxidised and bleached, whereas in the flowers the colour was restored.

MAY 15, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Mr. Denning for an unnamed species of *Masdevallia* and *Odontoglossum coronarium* ; to M. Jean Verschaffelt for *Agave robusta*, *A. Leopoldii*, *A. Killischii*, and *Buonaparteia hystrix vera* ; to E. Foster, Esq., for Show Pelargoniums, Chancellor and Naomi ; to Mr. D. S. Thompson for *Gloxinia*, *Cecilia* ; and to Mr. Turner for Carnations, Empress of Germany, Marchioness of Westminster, and Princess Christian, and for *Azalea grandis*, the best salmon-red yet seen. Cultural Commendations were awarded to Mr. Chambers, gardener to J. Laurence, Esq., for cut blooms of *Rhododendron Dalhousianum* ; to Mr. Green for Bromeliads ; and to Mr. R. Dean for a new Wallflower-leaved pyramidal Stock.

SECOND MAY SHOW.

Mr. Turner and Messrs. Paul had a hard contest for the principal Rose Class, as also for twelve specimen plants of Roses. The Prizes given by Mr. Peacock for twenty-four distinct species of *Agave* were gained by W. B. Kellock, Esq., and M. Verschaffelt, to whom several First-class Certificates were awarded. The best twelve hardy perennials came from Mr. R. Parker and Mr. Ware. Mr. Turner took the Prize for Carnations, given by G. R. G. Ricketts, Esq. Extra Prizes were awarded to Mr. B. S. Williams for a large group of flowering plants, including many novelties ; to Messrs. Veitch for Roses in pots and young *Rhododendrons* ; to Mr. Ware for alpine and hardy plants ; to Mr. Pestridge for small

baskets of Tricolor Pelargoniums; to Messrs. Dobson for herbaceous Calceolarias; to Mr. W. Davis for Show Pelargoniums, excellent market varieties; to Mr. W. Paul for cut Roses; to Messrs. Standish for *Eucharis amazonica*; and to M. Verschaffelt for a very handsome pair of Bay Trees.

FRUIT COMMITTEE.

A First-class Certificate was given to Mr. J. Munro for his seedling Melon, "Little Heath," a scarlet-fleshed acquisition for early work, and which is very prolific. A Cultural Commendation was given to Mr. J. Tegg, gardener to J. Walter, Esq., for Black Hamburg and Buckland Sweet Water Grapes, and nicely-coloured fruit of Grosse Mignonne Peach. Mr. Gardiner sent Apricots and Pear shoots, to illustrate the beneficial effects of protecting the trees when in bloom with (Frigi Domo) canvas. Henry Webb, Esq., sent Pears attacked by a small fly, and offered a Prize of £5 to anyone who will point out how the evil effects of the insect can be prevented. Messrs. Carter's Prizes for First Crop Pea were taken by Mr. J. W. Chard, Mr. G. Brown being second, who was first in the other Class with Little Gem.

SCIENTIFIC COMMITTEE.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Mr. Berkeley made some remarks with respect to the Australian Vine Disease, described in the "Gardeners' Chronicle," May 4, 1872 (pp. 607-8), by Mr. McArthur. The spots on the berries were not the same as those on the stems; they were unconnected with any fungoid growth, but the former were perhaps due to a *Glæosporium* or *Phoma*. He understood that in the year when the disease had been at its worst, there had been a rainfall of sixty inches; he concluded that this had something to do with the matter, though the disease appeared to have existed in Australia from the earliest period of Vine cultivation.

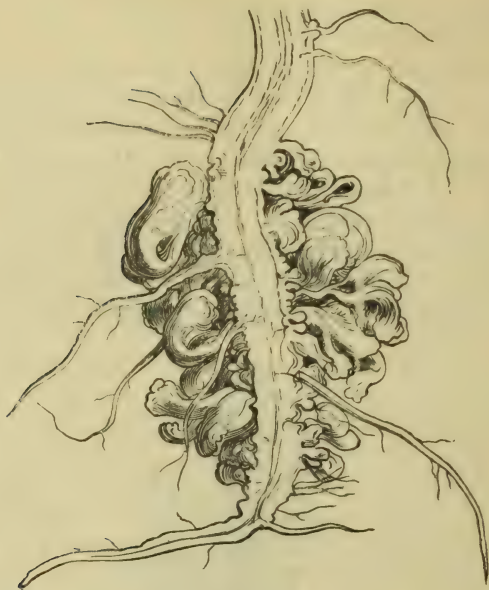
Mr. Berkeley also exhibited a Vine shoot from his own vinery, which had rotted at the nodes in a quite unaccountable way. He could not help thinking that this had something in common with the disease which proved so fatal to *Phalænopsis*. Too much moisture at the roots, arising from the superabundant rainfall, was suggested as the cause of the malady in Mr. Berkeley's case. Leaves of an Apricot were shown, which appeared to have

been attacked by some small Lepidopterous larva, probably belonging to the family of the *Tortricidæ*.

A communication was read from Mr. Anderson-Henry "On Hybrids of *Arabis*," published in the "Gardeners' Chronicle," May 18, 1872 (pp. 671—2). [From notes by Prof. Thiselton Dyer and Mr. Anderson-Henry, published in the "Gardeners' Chronicle" for July 27 and August 3, 1872 (pp. 1007 and 1040), some accidental error would appear to have vitiated the experiments.]

Mr. W. W. Saunders exhibited a stem of sprouting Broccoli, which having been cut too low down, had thrown out numerous adventitious buds below ground from its roots. (*See accompanying woodcuts.*)





Mr. Andrew Murray showed specimens to prove that Dr. Roberts's method of treating trees affected with *Scolytus* could do little to repair their already diseased condition. Courval's plan of dressing the trees after pruning equally failed to produce any true union between the old wood and the new.

Mr. McLachlan said that it was only trees which were already diseased which were attacked by the *Scolytus*; the insect, in fact, had no chance except in a feeble tree. Mr. Wallace and Mr. Bates equally failed to find wood-eating beetles in the native forests; they were only met with where clearings were being made.

GENERAL MEETING.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Mr. Berkeley brought a flowering plant of *Lupinus rivularis*, raised from seeds gathered on the banks of the Dee below Ballater, where it is perfectly naturalised. He then alluded to a case of disease in the Vine, which attacked the nodes, causing them to break off, and which he thought was due to excessively wet weather, in which he was confirmed by Mr. Barron.

Mr. Bateman remarked that dried specimens of *Odontoglossum coronarium* had been received with seventy flowers on a spike.

Professor Thiselton Dyer made some remarks on the varieties of Kale cultivated at Chiswick, an account of which has been given in the Journal, N.S., vol. iii., p. 171, by Dr. Hogg. He stated that many of the Plum blossoms in the Orchard House at Chiswick had two carpels, the groove being ventral; and Mr. Berkeley had informed him that in late-developed flowers he had seen the complete number of five carpels.

JUNE 5, 1872.

FLORAL COMMITTEE.

First-class Certificates were awarded to Mr. Denning for *Utricularia montana* and the extraordinary Orchid *Nanodes Medusa*; to Messrs. Downie Laird and Laing for *Botryodendron magnificum*; to M. C. Pfersdoff for *Euphorbia Habana monstrosa*; to Mr. T. S. Ware for *Aquilegia aurea*; to W. B. Kellock, Esq., for *Dasylirion glaucum*, *Puya coarctata*, and *Yucca Treculeana*; to Messrs. S. Dixon and Co. for a crested *Pteris serrulata* and a double Petunia, King of Crimsons; to Mr. T. S. Ware for Pansy, Pluto; to Mr. Lee for Tree Carnation, Model; to E. B. Foster, Esq., for new Show Pelargoniums; to Mr. R. Weatherill for a semi-double Show Pelargonium, Captain Raikes; and to Dr. Denny for Zonal Richard Cœur de Lion. A Cultural Commendation was given to Provost Russell, Falkirk, for a group of cut Orchids.

GREAT SUMMER SHOW.

Mr. Baines was first in the Open Class for twelve, and the Amateurs' Class for six, stove and greenhouse plants, Mr. J. Wheeler being second in the one and Mr. J. Ward in the other. The Nurseryman's Class for six was headed by Messrs. Jackson, Mr. B. S. Williams being second. For twenty stove and greenhouse plants Messrs. Jackson were first and Mr. J. Ward second. Mr. Baines was first for fine-foliaged plant; M. Alexis Dallièrè second. The Amateurs' Class for six was headed by Mr. Cole, Mr.

Donald and Mr. F. Hill being second and third. Mr. Bull took the First Prize in the Open Class for twenty in 12-inch pots. The Gold Medal was won by Messrs. Veitch for *Croton Wiesmanni*, *Paulinia thalictrifolia*, and variegated *Pandanus Veitchii*; Mr. Bull taking the Silver Medal for *Maranta Seemannii*, *Macrozamia corallipes*, and *Kentia Forsteriana*. *Aralia Veitchii* obtained a Gold Medal as the best new Plant not in flower and not in commerce; Mr. Bull being second with *Croton majesticum*. Messrs. Veitch were first for twelve new plants in or out of flower, Mr. Bull second; and the position was the same for six. Mr. Ward was first for nine and six Heaths, Mr. J. Wheeler and Messrs. Jackson being second.

In Orchids Mr. B. S. Williams was first, Mr. Bull second, while Mr. Ward had the best twelve in the Open Class. Mr. G. Wheeler was the only exhibitor in the Class for Amateurs who had not previously taken the Society's Prize for Orchids.

In Ferns the best stove and greenhouse species were staged by Mr. Baines and Mr. B. S. Williams. Show Pelargoniums were a striking feature of the Show, Mr. Ward being first, Mr. James Weir second, and Mr. James third. Mr. D. Donald had the best Fancies, Mr. Bone being second. Messrs. Paul were first for cut Roses, and Messrs. Kelway second. M. Pfersdoff staged a fine collection of Cacti which obtained the Prize offered by Mr. Peacock, who is now possessor of the plants.

FRUIT COMMITTEE.

Cultural Commendations were awarded to A. Smee, Esq., for White Juneating Apples grown in an orchard-house; and to Mr. Colbourne, gardener to J. Blyth, Esq., for a dish of Loquat of first-rate flavour. A new white silver Tripoli Onion called Marzagola was sent by Mr. Piccirillo, and Messrs. Criscuolo the true White Nocera from Naples.

The collection of fruit at the Summer Show was large; Mr. Lynn, gardener to Lord Boston, was first for eight distinct dishes of fruit, Mr. Bannerman being almost equal. Mr. D. Wilson was first for Queen Pine, Messrs. Yates second, and Mr. J. Hepper third. Mr. Wilson was first with a handsome smooth Cayenne, followed by Mr. Bland and Mr. Douglas. Mr. Sage was first for Grapes, Mr. Henderson second, Mr. Craven third, and Mr. Bannerman fourth. For a single dish of Hamburgh or Frankenthal, Mr. Douglas first, Messrs. Wright second, Mr. Sage third. Mr.

Bannerman was first for a single dish of any other variety, and Mr. Lynn second, both with the Black Prince. For a single dish of Muscat, Mr. G. Osborn was first, Mr. D. Pizzey second, and Mr. Kemp third. Mr. Douglas was also first for any other dish of White Grape, with splendid examples of Buckland Sweetwater; Mr. Craven second and Mr. Roe third with Golden Hamburgh. Mr. Kemp and Mr. Pizzey were first and second for White Frontignan, Mr. Bannerman third with Grizzly Frontignan. Mr. Brown, gardener to Earl Howe, Mr. Gardiner, and Mr. G. T. Miles, gardener to Lord Carrington, were the successful exhibitors of Peaches, Mr. Miles being first, Mr. Gardiner second with Elruge Nectarines. Brown Turkey Figs came from Mr. Miles, Mr. Sage, and Mr. C. Ross. Mr. Miles also had two First Prizes for Black Circassian and Elton Cherries. Mr. Douglas was first for Strawberries, Mr. Lynn second. The Melons were inferior in flavour, the Prizes being awarded to Mr. Lamb, gardener to G. T. Davie, Esq., for Colston Basset Seedling; Mr. Bannerman and Mr. Lynn succeeding with Victory of Bath. In the scarlet-fleshed series Mr. Douglas had Scarlet Gem, Mr. Munro second with Little Heath, Mr. Lynn third.

SCIENTIFIC COMMITTEE.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

The Belgian Delegates, MM. de Canaert d'Hamale, Kegeljan, and Morren, and Mr. Haliburton, from Nova Scotia, attended the meeting.

Mr. Berkeley brought a specimen of Pear blossom with a second generation of buds arising from the pedicels.

He also showed branches of a Pine the tips of which were distorted by a minute Coccus.

Mr. Smee brought specimens of Almond and Peach leaves blistered, as Mr. Berkeley supposed, by a minute Fungus. Mr. Smee was disposed to attribute it, however, to the action of an Aphis. He brought in illustration Currant leaves clearly blistered by the Aphis which was so destructive last year. Some trees were quite killed by it, but others sprouted freely, and he had observed that the new shoots were attacked by an Aphis of quite a different kind.

Branches of Juniper were shown by Dr. Masters swollen by a species of *Podisoma* which, like *Cyttaria* and *Apodanthes*, produces a new crop year after year.

Also some cuttings of *Hydrangea*, which were rotten and mouldy at the base, apparently from over-watering.

Professor Morren stated that *Lychnis Flos-euculi* sometimes produces apetalous flowers, in which the stamens are replaced by carpels, as in the common Wallflower.

Mr. Berkeley stated that he had again examined the specimens of Black Spot from Australia, and found that there was clearly a species of *Glæosporium* in the spots on the fruit, but he was not at present prepared to say as much as to those on the stem.

GENERAL MEETING.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Mr. Marshall stated that last winter Dr. Denny had told him that amongst Zonal Pelargoniums there appeared to be two strains, one of which would not submit to forcing operations. Mr. Berkeley stated that *Utricularia montana* was *U. alpina*, Linn. He again referred the blister in Peach and Almond leaves to a parasitic Fungus, belonging to the genus *Ascomyces*. With reference to Bornet's paper on the nature of the gonidia of Lichens, read before the Academy of Sciences in Paris, he stated that Dr. Thwaites had long since shown that certain supposed Algæ were mere states of Lichens, a different type prevailing in different genera. Mr. Berkeley by no means agreed with the notion that Lichens are Fungi parasitic on Algæ.

JUNE 19, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to W. Marshall, Esq., for *Phaius Bensoniæ*, var. *Marshalliæ*, Reich.; to Mr. Cripps for the golden *Cupressus Lawsoniana lutea*; to Mr. B. S. Williams for *Pteris Applebeyana*; to Messrs. Rollisson for *Erica jasminiflora roseo-tincta*, a variety which is not gummy, and can therefore be kept clean; to Mr. Welch for Tricolor Pelargonium, Magdala; to Mr. Edmunds for a variety belonging to the same class, named Mrs. H. Little; and to Messrs. Downie Laird and Laing for four new Fancy Pansies. A Cultural Commendation was given to Mr. Denning for a group of Orchids, and for *Epidendrum nemorale*.

SECOND JUNE SHOW.

In the Amateurs' Class for six Zonal Pelargoniums Mr. Weston, gardener to D. Martineau, Esq., obtained a Second Prize. An Extra Prize was voted to Mr. Catlin for six which did not arrive in time to compete. Messrs. Wright took a Second Prize in the Nurseryman's Class, and the same for six double Pelargoniums. Mr. Watson was first for variegated Zonals; Mr. Welch second. In the Nurseryman's Class Mr. Pestrige was first, Mr. Stevens second, and Mr. Turner third. The Fuchsias were scarcely of average merit. In Palms Mr. Williams was first with a splendid group, Mr. Bull second, Messrs. Rollisson third. In the Amateurs' Class the principal exhibitors were Mr. J. Hill, Mr. Cole, and Mr. G. Wheeler. Mr. Dombrain was first for twelve Ranunculi, Mr. Hooper second. The Metropolitan Floral Society offered Prizes for twenty four, and they were won by the same exhibitors, Mr. Hooper having the best. Prizes were also offered for stands of twenty-four Pinks, for which Mr. Turvey, Mr. Pizzey, and Mr. Hooper were successful.

SCIENTIFIC COMMITTEE.

ANDREW MURRAY, F.L.S., in the Chair.

The Chairman laid before the Committee leaves of *Hedera Regneriana* in a diseased condition, sent by the editor of the "Garden." Mr. Berkeley subsequently reported this to be due to a species of Thrips; there was also a Coccus, but only one individual was found.

Mr. Worthington Smith sent a woody excrescence from the stem of a *Cupressus*. It was cushion-shaped, comparatively soft in texture, and attached to a very short pedicel. Its analogy was suggested to the excrescences on Camellia, described and figured in the Gard. Chron., 1870, p. 1116.

Dr. Masters read a note upon some roots which had obstructed four-inch pipe-drains sunk to a depth of four feet in some old permanent pasture, and which had been sent to him by Mr. Grantham. Dr. Masters having found in them bright yellow sinuous laticiferous vessels, concluded that they were the roots of some Thistle.

Prof. Voeleker had seen the roots of Marigolds in drains three

feet deep; and, in reply to a question, doubted the practicability of remedying the obstruction by pouring in any chemical reagent.

Mr. McLachlan mentioned that *Phyllotreta obscurella*, a species of *Halticidæ*, very common on edible cruciferous plants, had been found in multitudes destroying the petals of *Limnanthes Douglasii*, but leaving untouched neighbouring plants of other natural orders.

Reference being made, at the suggestion of Dr. Masters, to a paper by Chatin (Ann. d. Sc. Nat., 1856, vi., 256), it was ascertained that *Limnanthes*, like *Tropæolum*, appeared to contain allyl sulphocyanide, $\left. \begin{array}{l} \text{C}_3\text{H}_5 \\ \text{CN} \end{array} \right\} \text{S}$, which was also present in Crucifers.

Mr. Marshall sent flowers of two varieties of *Gloxinia*, *G. Cartoni* and *robusta*, which he stated had been produced by the same plant. He also sent a monstrous flower of an *Odontoglossum*, which was referred to Dr. Masters for a report.

GENERAL MEETING.

JAMES BATEMAN, Esq., F.R.S., in the Chair.

Professor Thiselton Dyer called attention to a pot of *Gynadenia Conopsea*, showing that our native Orchids are capable of becoming striking plants in cultivation. *Ophrys apifera*, var. *Trollii*, also from the Chairman, was new to this country. The plants were obtained in the neighbourhood of Reigate. *Epidendrum nemorale*, Lindl., was figured in Bot. Mag. under the name of *E. verrucosum*. It succeeds best under a cool treatment. *Botryodendron magnificum* is no doubt the same as *Meryta latifolia*, Bot. Mag., t. 5932. The specimens from Strathfieldsaye, supposed to be *Diospyros lucida*, were probably *Nyssa multiflora*. The bright crimson tint of the leaves in autumn is characteristic in North America, where it is known under the name of Tupelo or Pepperidge. A plant of *Toxicophlea*, from the smaller limb of the corolla, was probably *T. Thunbergii* rather than *T. spectabilis*. An almost unknown Lily, which Mr. Wilson had shown in flower, *L. californicum*, hitherto not seen by Baker and Duchartre, was clearly an ally of *L. superbum*.

JULY 3, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Mr. Bull for *Echeveria scaphylla*, a hybrid between *E. agavoides* and *E. linguæfolia*, for *Macrozamia corallipes*, and *Lilium Humboldtii*; to G. F. Wilson, Esq., for *Lilium Martagon dalmaticum*, with small dark-maroon flowers; to Messrs. Stacey for Verbena, Lady of Lorne; to Mr. G. Smith for Ivy-leaved Pelargonium, Argus; to Messrs. Downie Laird and Laing for silver-edged Pelargonium, Mrs. Laing; to Mr. R. Dean for pyramidal Stock, Mauve Beauty; and to Mr. Kimberley for Tricolor Pelargoniums, Empress and Gem of Tricolors. Cultural Commendations were awarded to Mr. T. Burnett, gardener to W. Terry, Esq., for *Anætochilus Lowii*; and to Mr. J. Lawrence for *Maxillaria venusta*. Mr. Wilson brought flowering plants of a Lily found by Mr. Robinson on the Rocky Mountains, with flowers nearly resembling those of *L. puberulum*, but quite distinct in the foliage, the beautiful *L. canadense flavum*, and a fine variety of *L. longiflorum*.

FRUIT COMMITTEE.

A First-class Certificate was given to Mr. Laxton for a seedling Strawberry named Traveller, a cross between Sir C. Napier and La Constante. A Cultural Commendation was awarded to Messrs. Osborn for fruit of the Gamboge (*Xanthochymus pictorius*); and to Mr. G. Johnson, gardener to W. C. C. Thornhill, Esq., for large and highly-coloured fruit of Dr. Hogg and Sir C. Napier Strawberries.

SCIENTIFIC COMMITTEE.

A. MURRAY, Esq., F.L.S., in the Chair.

Mr. Berkeley made some further allusions to the Black Spot, which is making such havoc in the Vines in Australia. Specimens of adventitious buds from the roots of Apples were also exhibited

by him, and a branchlet of Oak, severed by the natural process of "cladoptosis," or, as it is called in the vernacular, "spolching."

Judge Crease, of British Columbia, sent specimens closely resembling in outward appearance, as also in internal markings, a peeled Willow. The substance in question consists almost entirely of carbonate of lime, and was stated to be the core of a species of Sea Pen (*Osteocella septentrionalis*).

A question then arose as to whether pollen-eating beetles were serviceable to flowers or not; the general impression was that the beetles in question did as much good as harm.

Professor Thiselton Dyer exhibited specimens of the ash and scoriæ from the recent eruption of Vesuvius. The ash is known to have powerful fertilising properties, owing to its being rich in alkalies and containing phosphates. The fertility of the soil so induced affords one reason for the return of the population to such dangerous localities after an eruption.

Mr. A. W. Bennett alluded to a paper of Professor Pasquale's, in which the injury to vegetation after the eruption of a volcano was stated to be the result of the chloride of sodium deposited on the leaves.

Professor Thiselton Dyer showed Rhubarb leaves from Mr. Schofield's garden at Mosely, near Birmingham, riddled with large holes made by hailstones in the recent storm.

Mr. G. F. Wilson showed a box useful whilst on a journey for collecting living plants, and further alluded to at the General Meeting.

GENERAL MEETING.

JAMES BATEMAN, Esq., F.R.S., in the Chair.

Mr. Berkeley alluded to a new but very simple form of collecting-box, designed by Mr. James Atkins, of Painswick, for collecting plants in Switzerland, and exhibited by Mr. Wilson. The box before the meeting contained roots of several different plants, including the Holly Fern, collected on a high hill in Perthshire, June 14, and which were now in excellent condition. The storm at Birmingham of Tuesday, June 18, continued for four hours, during which the rainfall was 2·5 inches, two inches at least coming down in forty-five minutes. Some ashes gathered after the recent explosion of Vesuvius were shown, which are said to be the

finest manure for Onions. The sample would be analysed, with a view to the preparation if possible of an artificial manure of similar virtue. Mr. Wilson, it was stated, grew his Lilies, in the cultivation of which he is so successful, in deep pots; but he found that they do well in a stiff clay soil in the open ground, where, however, they must be mulched in winter.

JULY 17, 1872.

FLORAL COMMITTEE.

A First-class Certificate was given to G. F. Wilson, Esq., for *Lilium Leichtlinii major*, which was bought as *L. callosum*; to Mr. Turner for Picotee, B. J. Bryant, for Carnation, Superb, and for Zonal Pelargonium, Mr. Quilter; to Mr. J. King, gardener to the Rev. J. S. Wiggett, for Zonal Pelargonium, Pink Pearl. Mr. Wilson also sent *Lilium tigrinum erectum*, and a dwarf deep-red form, which was named *L. concolor sinicum*.

Messrs. Jackman received the First Prize for Clematis; and the same was awarded to Mr. Wilson for Lilies, which, however, as a Member of the Council, he could not take. First-class Certificates were given for *L. tigrinum splendens* and *L. japonicum Takesima*. Mr. Bull received the First Prize for six Lilies in the Nurseryman's Class, and for six Gesneriaceæ. Mr. Parker was first for hardy perennials. An Extra Prize was awarded to Mr. Turner for eighteen boxes of cut Roses in splendid condition; he was also first for Carnations, and also for Picotees not yet in commerce, followed by Mr. N. Norman. The Metropolitan Floral Society gave Prizes for Carnations and Picotees, which were taken in both classes by Mr. Pizzey and Mr. Norman. Amongst Mr. Turner's Picotees and Carnations, First-class Certificates were given to Picotees Mrs. Fordham, Edith Dombrain, Mrs. Hornby, Juliana, Norfolk Beauty, and Ethel; Carnations, Mrs. F. Burnaby, Isaac Wilkinson, and Campanini.

FRUIT COMMITTEE.

Cultural Commendations were awarded to Mr. Tillery for Violette Hâtive Nectarines, and to Mr. Miller, Worksop, for a large Providence Pine. Mr. Linden sent fruit of a new Pine, which was considered of great promise.

SCIENTIFIC COMMITTEE.

ANDREW MURRAY, Esq., F.L.S., in the Chair.

A copy of a communication to the Foreign Office from H.M.'s Minister at Lisbon, alluding to the new Vine Disease in Portugal, was brought before the Committee.

Dr. Masters made a statement with respect to the management of the Royal Gardens at Kew; and the following resolution was proposed by Mr. Grote, seconded by Dr. Gilbert, and carried unanimously:—

“That the members of the Scientific Committee of the Royal Horticultural Society, having regard to the present question between Dr. Hooker and Mr. Ayrton, desire to express their sense of the importance of Dr. Hooker's efforts to maintain unimpaired the scientific character of Kew, as an establishment indispensable to Horticultural and Botanical Science; and are further unanimous in giving their support to the memorial which has already been forwarded to Mr. Gladstone.”

Prof. Thiselton Dyer said, with reference to the hybrid seedlings which had been communicated by Mr. Anderson-Henry on May 15 (see p. xix.), and in which the second generation exhibited extreme divergence both from their hybrid parent and the original species of which it was a cross, he could not refrain from suspecting some error. Every botanist who had examined the plants of the second generation had pronounced them without doubt to be ordinary *Arabis hirsuta*. (Mr. Anderson-Henry acquiesced in this opinion—Gard. Chron., 1872, p. 1040—and allowed that some error must have been made.)

GENERAL MEETING.

J. BATEMAN, Esq., F.R.S., in the Chair.

Prof. Thiselton Dyer said that Mr. Wilson's *Lilium californicum* was identified by Mr. Baker as *L. carolinianum*. The *L. californicum*

of our gardens, introduced originally by the Society, is now called *L. Humboldtii*. The fine Lily exhibited by Mr. Wilson at the last meeting without a name is *L. pardalinum* of Kellogg.

AUGUST 7, 1872.

FLORAL COMMITTEE.

Messrs. Standish sent a collection of cut spikes of *Gladiolus*, most of which were raised from a cross between *G. cruentus* and the best French varieties, by which it is hoped that the constitution will be improved. For these an Extra Prize was awarded. Mr. Bull's collection of Arads, including a magnificent specimen of *Godwinia gigas*, excited much interest. A Cultural Commendation was given to Messrs. Veitch for *Grammatophyllum Ellisii*; and to Mr. Boxall, gardener to A. B. Bramley, Esq., for a grand specimen of *Cattleya crispa*. A First-class Certificate was given to R. A. Thompson, Esq., for *Lastrea Filix-mas Festingii*.

FRUIT COMMITTEE.

Two bunches of the new white Grape, Duke of Buccleuch, were exhibited, and Mr. Barron was deputed by the meeting to go to the Vineries at Tweedside to report on it *in situ*. A Cultural Commendation was given to Messrs. Lane for a collection of Grapes. A First-class Certificate was given to Mr. J. Henson, Newark, near Peterborough, for a large round dark-red Gooseberry, named Henson's Seedling. Fine clusters of the fruit of *Habrothamnus elegans* came from the Marquis of Salisbury. Mr. Clark, gardener to Major-General Claremont, took the Prize for Plums; Mr. Beach was first, and Mr. Earley second, for Gooseberries. The six heaviest Gooseberries came from Mr. Kirtland.

GENERAL MEETING.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Mr. Berkeley read a letter from Mr. Smee relative to a Fungus which was destroying Willows in his garden, specimens of which were produced ; but as it was only in the mycelioid state of growth, it was impossible to say precisely what the perfect plant would prove. It might possibly be *Trametes suaveolens*.

Professor Thiselton Dyer called the attention of the meeting to a drawing of a tropical fruit from Dr. Moore. It appeared to be that of *Lucuma obovata*, a native of Temperate Peru, and cultivated in Chili. It had fruited this year, probably for the first time in this country.

According to Professor Pasquale, the volcanic ashes brought at the last meeting, from containing sodium chloride, were injurious to the foliage of plants at the time of the eruption. Dr. Flight had been so kind as to examine a portion. A considerable portion was soluble in water, and the two chief salts were sodium chloride and calcium sulphate (common salt and gypsum). "There is a little soluble silicate also. There is certainly ammonia (not much), I suppose in the state of chloride. Of phosphoric acid the merest trace, still a trace. Of potash, which I looked for sharply, there is none. Of course I have only examined the watery extract." This threw some light upon the usefulness of the ash as manure. Onions contain allyl sulphide ; their tissue also contain abundance of minute crystals of calcium oxalate. The calcium sulphate would supply both the sulphur and the calcium, which the Onion invariably contains. It would conduce, therefore, to its vigorous development.

Mr. F. Antoine had sent for the Lindley Library a beautiful and interesting work, illustrative of the Winter Garden at Vienna.

AUGUST 21, 1872.

FLORAL COMMITTEE.

A First-class Certificate was given to Mr. Wilson, gardener to W. Marshall, Esq., for *Lælia elegans Marshalliæ* ; to T. R. Tuffnell,

Esq., for *Lilium Lishmanni*; and to Mr. Keynes for Dahlias, Rev. J. M. Cannon, Ne plus ultra, and James Service, with a Second Class for Lucy Fawcett and Mr. Sinclair. Messrs. Kelway obtained a First Class for *Gladiolus Orcus*, *Lycoris*, *Lamirus*, *Osci*, and *Heloris*; and Mr. Douglas for Rosy Morn, Gwendoline, Morgan, and Day Dream. A Cultural Commendation was given to Mr. Baines for a wonderful specimen of *Nepenthes Rafflesiana*, with fifty pitchers. It was also recommended that it should have a Lindley Medal. (*See woodcut on following page.*)

A First-class Certificate was given to *Phlox Heynholdii cardinalis*, pale brick-red with crimson eye, from the Society's Garden at Chiswick; and to Mr. G. Smith for *Fuchsia*, Delight, with a large white corolla.

Messrs. Kelway were first for twenty-four distinct Gladioli, Mr. Douglas second, Messrs. Standish third, and Mr. Welch fourth. Lord Hawke was the winner in the Amateur Class for twelve Mr. J. Douglas second, the Rev. H. H. Dombrain third. Mr. Dombrain was first for six, Rev. Lord Hawke second, the Rev. J. S. Hodgson third, Mr. Douglas fourth. Mr. Parker and Messrs. Downie Laird and Laing competed for twelve cut Phloxes, the latter being first for twelve hardy perennials.

FRUIT COMMITTEE.

Mr. Barron reported on the Duke of Buccleuch Grape as a very valuable summer Grape, but which would not keep long after being ripe, as it is thin-skinned. It is extremely pleasant to eat, the flesh tender and juicy, with a rich sparkling acidity somewhat of the Hamburgh character. A First-class Certificate was accordingly awarded. Messrs. Carter offered Prizes for Runners and French Beans, including Carter's Champion. Mr. Ross was first, Mr. Frisby second. Mr. J. Smith, gardener to the Earl of Gainsborough, made a communication as to the effect of lifting and renewing the soil in preventing shanking in Grapes, a circumstance which cannot be too carefully kept in mind in many other cases of disease.

GENERAL MEETING.

W. MARSHALL, Esq., in the Chair.

The Sooly Qua Cucumber, which is clearly *Luffa aegyptiaca*, is much valued by the Chinese in California. Mr. Baines has



stated that such fine pitchers as those which appeared at the last meeting in *Nepenthes* could only be obtained on young plants. He grows the plant in sifted fibrous peat, giving plenty of water and air. It must be kept as near to the glass as possible, and as regards temperature those who had a house in which Cucumbers were grown all the year round could grow the Pitcher plant in perfection.

SEPTEMBER 4, 1872.

FLORAL COMMITTEE.

A First-class Certificate was given to Messrs. Veitch for *Dipladenia insignis*; to Messrs. Henderson for *Ceanothus*, Gloire de Versailles, and *Cineraria ceratophylla*; to Mr. Chambers, gardener to J. Lawrence, Esq., for *Pteris serrulata fimbriata* and *Pteris serrulata cristata superba*, a compact and neat-growing form of such excellence that every gardener would find it useful; to Mr. Parsons, gardener to W. J. Blake, Esq., for a new *Achimenes*, Firefly; to Mr. C. J. Perry for *Verbena*, Reynolds Hole; and to Mr. Eckford, gardener to the Earl of Radnor, for *Verbena*, Fanny Purchase, *Verbena* Star, and *Dahlia*, Crown Prince; to Mr. Keynes for *Dahlia*, Ada Tiffin, *Egyptian Prince*, *Matilda Mary Purchase*, and Mr. Sinclair; to Mr. Turner for *Florence Pontin* and *Lord Hawke*; and to Mr. Dean for *Tagetes aurea floribunda*.

Mr. Keynes, Mr. Turner, and Mr. Scale obtained the Prizes for twenty-four cut blooms of *Aster*. In the Amateurs' Class for twelve Mr. C. J. Perry was first, Mr. Beach second, and Mr. Burfitt, gardener to C. Lambert, Esq., third. Mr. Rowe and Mr. S. Wheeler obtained other Prizes in the different classes. Mr. Perry was first for *Verbenas*. Mr. Paul took the Prize for *Lilium speciosum*, and an extra Prize for seedlings grown in Holland. Messrs. Standish had a First-class Certificate for *Juniperus japonica aurea*.

FRUIT COMMITTEE.

Lady Charles Wellesley sent a fine cone of *Araucaria imbricata* from whose seeds young plants have been raised. Mr. Pearson

sent, amongst other seedling Grapes, one remarkable for its strong barley-sugar flavour. Mr. G. F. Wilson brought examples of the Melon Apple, which ought to be in every orchard-house for its beauty and fine flavour. Mr. Dean brought jelly of *Berberis Aquifolium*, and Blackberry jam flavoured with the fruit of the *Berberis*.

GENERAL MEETING.

G. F. WILSON, F.R.S., in the Chair.

The *Dipladenia insignis* was stated to be a great advance from a horticultural point of view; but compared with coloured illustrations of *D. crassinoda* (properly *Martiana*), it could only be regarded botanically as a variety of that species.

SEPTEMBER 18, 1872.

FLORAL COMMITTEE.

First-class Certificates were given to Mr. Croucher for *Agave Gilbeyi* and *A. striata Richardsii*; to Messrs. Lee for *Cornus mascula aurea elegantissima*; to Mr. Turner for Dahlia, Laura Haslam, Prince Arthur, Nelly, and Arbitrator; to Messrs. Henderson for a new Asplenium, near to *A. bulbiferum*, var. *incisum*; to Mr. Stevens for Verbena, Prince of Wales; and to Mr. Eckford for Verbena, Mrs. Lewington, Star, and Dahlia, Walter Reid, Queen's Messenger, and Cre-morne. Messrs. Standish exhibited a series of seedling Rhododendrons showing the effect of the pollen-parent in hybridising. The specimens supported Dr. Denny's view that, *ceteris paribus*, the influence of the pollen-parent is predominant in the offspring. Mr. M. Walker, gardener to H. J. Atkinson, Esq., and Mr. Farrow were first and second for fine-foliaged Begonias. A Cultural Commendation was awarded to Mr. Wilson, gardener to W. Marshall, Esq., for *Platyserium grande* and *P. Stemmaria*, with seedlings of both; and to Mr. M. Walker for a good specimen of *Eucharis amazonica*.

FRUIT COMMITTEE.

Messrs. Carter offered a prize for Beet, including their Perfection, which was taken by Mr. W. G. Pragnell, who also won their First Prize for Onions, the second being given to Mr. Cross, gardener to J. D. Lousada, Esq. A First-class Certificate was awarded to Mr. Peasgood, Stamford, for a seedling Apple, named Peasgood's Nonsuch, of the Blenheim Orange type. A Cultural Commendation was awarded to Mr. King, gardener to J. Baum, Esq., for Pot Vines. Prizes for Tomatoes were taken by Mr. Pragnell, Mr. George, Mr. Earley, and Mr. Roberts. Hathaway's Excelsior, an introduction from America, came from Chiswick, certainly the finest type yet seen. Prizes for Dessert Apples were taken by Mr. E. Clarke and Mr. Earley, Mr. Donaldson taking the first in Pears.

GENERAL MEETING.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Professor Dyer stated that *Amorphophallus campanulatus* is cultivated in India, as in Coromandel, for the starch in its curious root-stock. The so-called Asmah Vegetable Marrows were *Lagenaria vulgaris*, which Mr. Berkeley had more than once pointed out as suspicious and sometimes poisonous. He then made some remarks on the Potato disease, calling attention to the present state of our knowledge on the subject, as also to what is known about the *Phylloxera*.

The Chairman stated that as soon as the flowers of *Amorphophallus* have thrown out their objectionable odour, the temperature of the spathe rises some 4° or 5°.

OCTOBER 2, 1872.

FLORAL COMMITTEE.

Mr. Bull obtained a First-class Certificate for *Dracæna gloriosa*, for *Macrozamia pulchra*, for *Helminthostachys verticillata* an ally of *Ophioglossum*, and for *Ænocarpus dealbatus*, a glaucous-leaved

Palm from Brazil. First-class Certificates were also awarded to Mr. Wilson, gardener to W. Marshall, Esq., for *Thamnopteris Nidus ramosa*; to *Anchusa capensis* from Chiswick; and to Messrs. Henderson for *Colchicum autumnale album plenum*; to Mr. Parsons for *Asplenium Adiantum nigrum Serpentine*; and to Mr. Dean for a dwarf French Marigold, with yellow-crimson flowers, and his new variety named *aurea floribunda*. Mr. Ingram sent from Belvoir a hybrid between *Pachyphytum bracteatum* and *Echeveria secunda glauca*, a promising plant for bedding out.

FRUIT COMMITTEE.

Cultural Commendations were awarded to Messrs. Veitch for an excellent collection of Endive; to Mr. Jones for smooth-leaved Cayenne Pines; to Mr. Wells for Black Hamburgh Grapes; to Black Hamburgh and Madresfield Court, grown at Chiswick without artificial heat; and to Mr. Fenn for a collection of Potatos. Messrs. Carter's Prize for Potatos, including Carter's Ashtop Fluke, were taken by Mr. Fenn; Mr. Miller, gardener to F. T. Friend, Esq., being second. Messrs. Lane were first for collections of black and white Grapes; they were again first for a single bunch of Muscat of Alexandria, Mr. Cole being second. Mr. Jones sent specimens of Golden Queen Pear, raised at Frogmore. Mr. Dean sent specimens of Californian Mammoth White Radish, a variety similar to which is cultivated in Hungary. Mr. Fenn brought samples of wine from English-grown Grapes, which were thought very satisfactory: the best was made from Esperione in 1870, and the next a mixture of Royal Muscadine and Esperione, a good dry wine.

FUNGUS SHOW.

Many novelties were produced, besides the more ordinary forms of edible and doubtful Fungi, which it is the great object of the Society to make familiar with its members. Amongst the rarer kinds were magnificent specimens of *Lactarius controversus* from Dr. Bull. Mr. English sent a *Hydnum* from Epping (where Mr. W. G. Smith found *Radulum fagineum*), which is certainly new to Great Britain, and which was believed to be *H. cirrhatum*. There were also fine specimens of *Thelephora multizonata* and *T. Sowerbei*, the former from Epping,

the latter from Hereford. Mr. Austin had *Hygrophorus obruenseus* and *Cortinarius armillatus*. Three fine specimens of *Sparassis crispa* were sent from Gordon Castle, and *Clavaria formosa* came from Mr. Broome. The Prizes were awarded to Mr. J. English, and to Messrs. Austin and Hoyle. For the collection of edible Fungi the latter gentlemen were first and Mr. English second. An Extra Prize was awarded to Mr. W. G. Smith.

GENERAL MEETING.

W. W. SAUNDERS, Esq., F.R.S., in the Chair.

Mr. Berkeley, alluding to Mr. Henderson's double white Colchicum, stated that Mr. Barr had several double varieties which had not yet been exhibited. They are most easy of cultivation, and make a great show in autumn when planted in tolerably-sized patches. Attention was called to the Chairman's plant of *Tupistra nutans*, a very singular production, now referred to Liliaceæ. Some of the varieties of the Bottle Gourd are very bitter and poisonous, and as none are really good they should be altogether avoided as esculents. Captain E. G. Berkeley had lately seen the original tree of *Amherstia nobilis*, which is flourishing; the stem is now twelve feet in circumference. He found two Fungi for sale in the Bazaar at Amherst, one a *Bovista*. Mr. Berkeley directed attention to the further study of the *Peronospora* to which the Potato disease is due, with a view to the discovery of its resting spores.

NOVEMBER 6, 1872.

FLORAL COMMITTEE.

A First-class Certificate was awarded to Mr. Croucher for the Mexican *Yucca Eylesii*, which has a woody stem eight feet high, swollen at the base, and straight glaucous tapering leaves; also for *Mammillaria Peacockii*, *Pilocereus Peacockii*, *P. Hoppenstedtii*, and * *Gasteria Peacockii*. The *Gasteria* is said to be a hybrid raised by

M Pfersdorff. *Agave Palmerii* in the same collection was considered to be young *A. Verschaffeltii*. The same award was made to Mr. Rowe, gardener to Mrs. Lewis, for Japanese Chrysanthemum, Elaine; to Messrs. Veitch for *Dracæna imperialis* and *Maranta olivaris Makoyana*, also *Malortica simplex*, *Calamus ovoideus*, and *C. Roxburghii*. Messrs Dixon had the best large-flowered Chrysanthemums, and Mr. Rowe the finest Pompons.

FRUIT COMMITTEE.

A First-class Certificate was awarded to Mr. Ross, gardener to C. Eyre, Esq., for an Apple allied to the Blenheim Orange, of a beautiful colour and excellent flavour. Cultural Commendations were given to a large gourd-like fruit, called Toong Qua (*Benincasa cerifera*), from Mr. Temple, gardener to Lord Aylesford; to Mr. D. Cunningham, gardener to Lord Ebury, and Mr. Davidson, for large specimens of the fruit of *Passiflora macrocarpa*. The Prizes for Pears were taken by Mr. Fowle, Mr. P. F. Le Sueur, and Mr. G. T. Miles; for Potatos, by M. J. Betteridge, Mr. R. Dean, and Mr. P. McKinlay. Messrs. Carter staged seventy-two varieties of Potatos, with Nazeby Mammoth Onion. Messrs. Lee also sent a good collection.

INTERNATIONAL FRUIT SHOW.

The Gold Medal for the most complete collection of Grapes was gained by Messrs. Lane, who staged seventeen varieties; the Silver-gilt Medal by Mr. Donaldson, gardener to Lord Chesham. For the best basket of not less than twelve pounds the First Prize was given to Messrs. Lane; the second to Mr. Ward, gardener to T. N. Miller, Esq.; the third to Mr. Cole. Messrs. Lane were also first for a single dish of Muscat of Alexandria; Mr. Cole second; and Mr. Deuxberry, gardener to Earl Darnley, third. For Black Hamburg or Frankenthal, Mr. P. F. Le Sueur was first; Mr. Davis, gardener to E Rosher, Esq., second. For a single dish of any other Black Grape, Mr. Toomer, gardener to W. Knowles, Esq., was first; Mr. Silcock second. There was a good competition. Mr. Silcock was first with Trebbiano for a white variety other than sorts specially named.

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ADVERTISEMENT.

Fellows and Correspondents of the Society are invited to communicate materials for this Journal, under cover, to the Rev. M. J. Berkeley, Sibbertoft, Market Harborough, or Prof. Thiselton Dyer, Royal Hort. Soc., South Kensington.

December 23, 1874.

Gray Herbarium
Harvard University

Vol. IV.]

[Part 15.

THE
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NEW SERIES.
VOLUME IV.

EDITED BY
THE REV. M. J. BERKELEY, M.A., F.L.S., F.R.H.S.

AND

W. T. THISELTON DYER, M.A., B.Sc., F.L.S.,
PROFESSOR OF BOTANY TO THE SOCIETY,

LONDON:
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1874.

PRICE TWO SHILLINGS.

XXIV. A Classified Synonymic List of all the Species of Passifloreæ cultivated in European Gardens, with references to the Works in which they are figured. By M. T. MASTERS, M.D., F.R.S.

TACSONIA, Juss. Gen., 398; Benth. and Hook., Gen. Pl., i., 810; Mast. in Trans. Linn. Soc., xxvii., 628, and in Mart. Flor. Brasil., fasc. 55 (Passifloraceæ), 535.

SECTION 1. EU-TACSONIA.—Bracts free.

1. **T. pinnatistipula**, Juss.; Bot. Reg., xviii., 1536; Bot. Mag., 4062; Mast. in Flor. Brasil., l.c., 537.

Passiflora pinnatistipula, Cav. Ic., v., 16, t. 428.

Poggendorffia rosea, Karst.; Flor. Columb. Spec. Select., i., 16, tab. 29.

Chile, Peru, cultivated in Columbia.

2. **T. van-Volxemii**, Hook., Bot. Mag., 5571; Ill. Horticole, x., t. 381; Mast. in Flor. Brasil., l.c., 537; Gard. Chron., 1866, p. 171, with fig. [Pl. VI.]

Passiflora antioquiensis, Karst.; Fl. Colomb. Ic. Sel., i., 143, tab. 71.

New Granada.

3. **T. insignis**, Mast., Gard. Chron., 1873, p. 1112, fig. 239; Florist and Pomologist, 1873, 241. [Pl. VII.]

Passiflora insignis, Hook., Bot. Mag., 1873, tab. 6069.

Eastern slope of the Cordilleras of Northern Bolivia.

SECTION 2. BRACTEOGAMA.—Bracts united at the base.

4. **T. manicata**, Juss., in Ann. Mus., vi., 393, t. 59, f. 2; Mast. in Fl. Brasil., l.c., 539; Paxt. Fl. Gard., 26.

T. ignea, Hort.

Andes of Peru, Ecuador and New Granada.

5. **T. peduncularis**, Juss., Mast., Fl. Brasil., l.c.

Passiflora peduncularis, Cav. Ic., v., 15, 426.

Peru.

This species is mentioned in some garden catalogues, but I have never met with it in cultivation.

6. **T. mollissima**, H.B.K., Nov. Gen. et Sp., ii., 144; Paxt. Mag. Bot., xiii., 25; Fl. de Serres, ii., 14; Bot. Mag., t. 4187; Mast. in Fl. Brasil., l.c., 541.

Passiflora tomentosa, var. β . *mollissima*, Triana and Planchon, in Ann. Sc. Nat., Ser. 5 (1873), xvii., 131.

New Granada.

Messrs. Triana and Planchon state that they find no difference between the Peruvian *Tacsonia tomentosa* and the New Granadan *T. mollissima*, except that the flower-tube is slightly pubescent in *T. tomentosa*, while it is quite glabrous in *T. mollissima*. In this opinion I cannot concur. The leaf-lobes of *T. mollissima*, as I understand it, are ovate-lanceolate or lanceolate, instead of broadly ovate; they are downy on both surfaces, instead of being nearly glabrous above, as in *T. tomentosa*. The involucre of *T. mollissima* often splits on one side like a spathe, and is composed of three ovate-lanceolate segments, which are united one to the other at different levels, and which have everted edges. In *T. tomentosa*, Lam., the involucre is regularly tubular, the constituent bracts are united two-thirds of the way up, and the free portions are broadly ovate-acute.

7. *T. mixta*, Juss., in Ann. Mus., vi., 394; Mast. in Flor. Brasil., l.c., 541.

Andes of New Granada, Ecuador, Peru, and Bolivia.

Var. 1. *SPECIOSA*, Mast., l.c., 541, tab. 128, fig. 1.

T. speciosa, H.B.K., Nov. Gen. et Sp., ii., 43.

T. tomentosa, Juss., var. *speciosa*, Mast., Gard. Chron., 1870, 955 (description and comments); Florist and Pomologist, 1871, 169.

Var. 2. *QUITENSIS*, Mast., l.c., 542

Tacsonia quitensis, Benth. Plant. Hartweg., p. 183; Mast. in Gard. Chron., 1869, 388.

T. tomentosa, Lam., var. *quitensis*; Triana and Planch., Ann. Sc. Nat., xvii., 1873, 131.

Var. 3. *ERIANTHA*, Mast., l.c., 542.

Tacsonia eriantha, Benth. Pl. Hartweg, p. 183; Hook. in Bot. Mag., 5750.

T. quitensis, var. *eriantha*; Mast. in Gard. Chron., 1869, 388.

The arrangement above given is that adopted in my monograph in the Flora Brasiliensis. The disposition proposed by MM. Triana and Planchon, l.c., is a little different, but considering how variable these plants are, how wide their geographical distribution (in some cases), and how great are the facilities for intercrossing, it would be impossible to obtain perfect

unanimity of opinion as to the name a particular variety should bear, or as to what species it should be ranged under. I have, therefore, adhered to my own arrangement, founded as it is in great measure on repeated examinations of cultivated specimens.

In addition to the foregoing species may here be cited the names of sundry garden varieties or synonyms.

T. Buchananii, Lemaire, Ill. Hort., t. 519, is *Passiflora vitifolia*, H. B. K.

T. exoniensis.—This is a hybrid between *T. mollissima* as the pollen parent, and *T. van-Volxemii* as the seed-parent, and partakes of the characters of both. It was raised in the garden of — Bowring, Esq., and was sent out by Mr. R. T. Veitch, of Exeter. It is fully described in Gard. Chron., 1872, 1653.

T. fulgens, Hort. Edinb. = *Passiflora quadriglandulosa*.

T. fulgens, Hort. = *Passiflora coccinea*.

T. grandis, Hort. Veitch.—Of this I have only seen immature leaves, which appear to be those of *T. van-Volxemii*.

T. ignea, Hort. = *Tacsonia manicata*.

T. pubescens, DC. = *Passiflora quadriglandulosa*.

T. quadriglandulosa = *Passiflora quadriglandulosa*.

T. sanguinea, Hook., Bot. Mag., t. 4674 = *Passiflora quadriglandulosa*.

T. splendens, Hort. Veitch. Of this I have only seen immature leaves.

Of species not yet introduced, *T. Jamesoni*, Mast., a native of Quito, may be mentioned as one of the very finest even in this remarkably handsome-flowered group. It is possible this species may be in the hands of Mr. Anderson Henry, as he received seeds of several kinds from the late Professor Jameson. In any case the attention of collectors should be directed to this plant, and, indeed, to the remaining species not yet known in gardens, and numbering about twenty in addition to those above enumerated. It is also probable that the less known regions of the Andes may yield other species at present quite unknown to science. The lovely *T. insignis* may be taken as a guarantee of this. This was introduced quite recently from Bolivia by Mr. Yarborough Greame, previously to which time the species was absolutely

unknown to botanists, as there are no specimens in the herbaria.

PASSIFLORA, Linn., Benth. et Hook. Gen. Pl. i., 810; Mast. in Trans. Linn. Soc., xxvii., 629, and in Mart. Flor. Brasil., fasc. 55 (Passifloraceæ).

SUBGENUS I. ASTROPHEA, DC.—Trees or shrubs usually without tendrils; membranous corona erect, flat, springing from the flower-tube below the middle; ovary truncate at the apex.

1. *P. arborea*, Spreng. Mast. in Flor. Brasil., l.c., 545.
Passiflora glauca, Humb., Bonpl. Pl. Æquinoct., i., 76, t. 22. Peru, New Granada, Ecuador.

In my monograph of the genus I have adopted Sprengel's name in preference to that of Humboldt, seeing that there was an earlier *P. glauca* of Aiton (in Hort. Kewens., iii., 308 (1789); Bot. Reg., t. 88. Messrs. Triana and Planchon, however, challenge the propriety of so doing, being of opinion that Aiton's *glauca* (1789) is a synonym of Aublet's *stipulata* (1775). As to the latter plant, the only material for an opinion is the plate in the Plantæ Guianens. (1775) which represents the foliage only, and no flowers. The leaves, and especially the stipules, differ from those of Aiton's *glauca*, on which account I prefer still to maintain my nomenclature in preference to that of MM. Triana and Planchon.

SUBGENUS II. PLECTOSTEMMA, Mast.—Climbing herbs or shrubs usually provided with tendrils; bracts minute or deeply divided; flower-tube short. Membranous corona horizontal, springing from above the middle of the tube, plicated and often fringed at the margin. Fruit baccate or dry.

SECTION I. CIECA.—Flowers apetalous, generally destitute of bracts.

2. *P. gracilis*, Jacq., Eclog. t. 168; Bot. Reg., t. 870; Mast. in Flor. Brasil., l.c.; 578.
3. *P. coriacea*, Juss., in Ann. Mus., vi., p. 109, t. 39, f. 23; Mast., l.c., 545.
P. clypeata, Smith in Rees' Cycl., n. 20.
P. difformis, H.B.K., Nov. Gen. et Sp., ii., 136.
P. biformis, Hort. Bull.

Remarkable for the singular conformation of its leaves.

Mexico, Venezuela, West Indies.

4. *P. suberosa*, Linn., Mast. in Flor. Brasil., l.c., 577 ; Jacq., Hort. Vind., t. 163 ; Cav. Diss., x., 442, t. 265.

P. pseudo-suberosa, Fisch., Ind. Sem. Hort. Petrop., ix., 82, ex Walp. Rep., ii., 934.

An exceedingly variable plant dispersed throughout tropical America. Most of the varieties here mentioned have been treated as separate species by different authors, and for garden purposes may well be considered as distinct forms. None of them, however, are worth cultivating save for botanical purposes.

Var. 1. MINIMA.

P. minima, Jacq., Hort. Vindob., t. 20.

P. Walkeriæ, Wight., Ill. Ind. Bot., ii., 39.

Var. 2. HIRSUTA.

P. hirsuta, Linn., Amœn. Acad., i., 227.

P. littoralis, H.B.K., Nov. Gen. et Sp., ii., 138

? *P. hispidula*, Knowles & Westcott, Flor. Cab., iii., 126.

Var. 3. ANGUSTIFOLIA.

P. heterophylla, Jacq., Hort. Schönbr., t. 181.

Var. 4. PALLIDA.

P. pallida, Linn., Bot. Reg., t. 660.

Var. 5. HEDERACEA.

P. hederacea, Cav. Diss., x., 448.

P. peltata, Hort.

5. *P. limbata*, Tenore, Mast., l.c., 547.

I have not seen this species, but presume it is closely allied to *P. suberosa*. It is cultivated in the Botanic Garden at St. Petersburg.

SECTION 2. DYSOSMIA.—Flowers with petals. Bracts deeply cut.

6. *P. foetida*, Linn., Amœn. Acad., i., 288, t. 10 ; Mast., in Flor. Bras., l.c., 582 ; Cav. Diss., x., 289.

P. hirsuta, Lodd., Bot. Cab., t. 173, not of others.

Another exceedingly variable plant, found wild or cultivated throughout the tropics, to which the same remarks apply, *mutatis mutandis*, as to *P. suberosa*. Messrs. Triana and Planchon treat as separate species the forms here considered as varieties, and point out their discrimi-

nating characters. While admitting the accuracy of their observations on particular specimens, I may remark that there are so many transitional and intermediate forms connecting the extremes, that it appears to me preferable, on scientific grounds, to treat the species in a broad comprehensive way. To follow the opposite course would almost necessitate the considering of every specimen in the herbaria or in gardens as a distinct species. The botanists in question lay great stress on the presence or absence of pubescence on the ovary and fruit respectively ; but from my examination of the herbarium specimens, and of numerous cultivated forms, I can by no means attach so much importance to this character as they do.

Var. 1. GOSSYPIIFOLIA.

- P. gossypiifolia*, Desv., Link & Otto, Ic. Pl. Rar. Hort. Berol., t. 46 ; Bot. Reg., 1634 ; Bot. Mag., t. 2619.
P. fetida, Lodd. Bot. Cab., t. 725, not of Linn.
P. obscura, Lindl., in Trans. Hort. Soc., vii., i.
P. hibiscifolia, DC. Prodr., iii., 331, not of Lam.
P. fetida, var. *gossypiifolia*, Triana & Planch., l.c., 170.

Var. 2. HIRSUTA, Lodd., Bot. Cab., t. 138.

- P. Baraquiniana*, Lemaire, Ill. Hort., vii., t. 276.
 ? *P. hispida*, DC. MS., ex. Triana & Planch., l.c., 172.

Var. 3. NIGELLIFLORA.

- P. nigelliflora*, Hook., Bot. Mag., t. 3635.

Var. 4. CILIATA.

- P. ciliata*, Aiton, Hort. Kew., iii., 310 ; Bot. Mag., t. 288.
P. hibiscifolia, Lam., not DC., Triana & Planch., l.c., 172.
P. hirsuta, Jacq., Eclog., 123.

SECTION 3. DECALOBA.—Bracts minute, scattered. Flowers with petals.

7. *P. sexflora*, Juss., in Ann. Mus., vi., t. 37, f. 1 ; Mast., in Flor. Bras., l.c., 548.
P. floribunda, Lemaire, Flore des Serres, iv., p. 335 b. West Indies, Mexico.
 8. *P. auriculata*, H.B.K., Nov. Gen. et Sp., ii., 131 ; Mast., in Flor. Brasil., l.c., 585.

- P. appendiculata*, Meyer, Prim. Fl. Essequib., 223.
P. Rohrii, DC., Prodr. iii., 331.
P. cyathophora, Desv., in Ham. Prod. Fl., Ind. Occ., 48.
 Brazil, West Indies, Guiana.
9. *P. truncata*, Regel., Gart. Flora., viii., 356 (1859); Mast., in Flor. Bras., l.c., 549.
 South Brazil.
10. *P. cuneata*, Willd., Mast., in Flor. Brasil., l.c., 549.
 Venezuela.
 I have no personal knowledge of this species, which is described in the catalogue of the Berlin Garden. Messrs. Triana and Planchon, l.c., 161, consider that it is probably the same as *P. glabrata*, H.B.K., which they keep up as a distinct species, but which I consider a form of *P. lunata*, Willd.
11. *P. tuberosa*, Jacq., Hort. Schönb., iv., 49, t. 496; Mast., in Fl. Brasil., l.c., 550.
P. punctata, Lodd., Bot. Cab., 101, not of others.
 West Indies, British Guiana, Mexico.
12. *P. rotundifolia*, Linn., Cav. Diss., x., t. 290; Mast., in Fl. Bras., l.c., 587.
 Brazil, West Indies.
13. *P. holosericea*, Linn., Bot. Mag., 2015; Bot. Reg., 59; Mast., in Flor. Bras., l.c., 550.
 Mexico.
14. *P. trifasciata*, Lemaire, Ill. Hort., t. 544.—Mast., in Flor. Brasil., l.c., 551.
 North Brazil?
15. *P. Andersoni*, DC., Prodr., iii., 336; Mast., in Fl. Bras., l.c., 551.
 West Indies.
 I have not seen this species in cultivation.
16. *P. Vespertilio*, Linn., Amœn. Acad., i., t. 10; Cav. Diss., x., 271; Mast. in Flor. Bras., l.c., Bot. Reg., 597.
P. hemicycla, Meyer, Fl. Esseq., 225.
Granadilla bicornis, Dill., Hort. Eltham, t. 137.
 Guiana, Brazil, Peru.
17. *P. rubra*, Linn., Amœn. Acad., i., 222, t. 10, f. 9.; Jacq., Ic. Rar., i., t. 186; Cav. Diss., x., t. 268; Bot. Reg., ii., 95; Mast. in Flor. Bras., l.c., 589.
P. capsularis, Lamarek, and of some gardens, but not of Linnæus. "Dutchman's laudanum."

Brazil, West Indies, Central America, Mexico.

18. *P. capsularis*, Linn., Bot. Mag., 2868; Mast. in Flor. Brasil., l.c., 589.

P. rubra, Lamarck, not of Linn.

Brazil, New Granada, Mexico.

The two preceding species are often confounded one with the other, but differ materially in the shape of the leaf and in that of the fruit.

19. *P. Organensis*, Gardn., Mast. in Flor. Bras., l.c., 590, t. 111. Brazil.

Var. MARMORATA; Mast. in Gard. Chron., 1869, 1168.

Brazil.

20. *P. lunata*, Willd.; Smith, Ic. Piet., i., 1; Cav. Diss., x., 288; Mast. in Fl. Brasil., l.c., 552.

P. biflora, Lam., Cav.

P. glabrata, H.B.K., Nov. Gen. et Sp., ii., 135.

Mexico, Central America, West Indies.

21. *P. mexicana*, Juss., in Ann. Mus., vi., 108, t. 38, f. 2; Mast. in Fl. Bras., l.c., 552.

Mexico.

I have not seen this in cultivation.

22. *P. jorullensis*, H.B.K., Nov. Gen. et Sp., ii., 140, Mast. in Fl. Brasil., l.c., 552.

P. medusæa, Lemaire, Bot. Mag., 4752.

Mexico.

23. *P. hispidula*, Knowles & Westc., Bot. Cab., iii., 126; Mast. in Fl. Brasil., l.c., 553.

Mexico (?).

This species (?) or variety (?) has apparently disappeared from British gardens. At any rate, I have not met with any plant so named. In all probability it is a synonym of some other species. See *P. suberosa* ante.

24. *P. penduliflora*, Bert., Bot. Mag., 4565; Mast. in Flor. Brasil., l.c., 554.

West Indies.

25. *P. lutea*, Linn., Amœn. Acad., i., 224, t. 10, f. 13; Bot. Reg., t. 79; Mast. in Fl. Brasil., l.c., 554.

Southern United States.

26. *P. siccyoides*, Schlecht. et Cham.; Mast. in Fl. Brasil., l.c., 591.

P. odora, Link et Otto, Ic. Pl. Rar. Hort. Berol., i., 93, tab. 47.

Mexico, Brazil.

27. **P. bryonoides**, *H.B.K.*, Nov. Gen. & Sp., ii., 140; Mast. in Flor. Brasil., l.c., 555.
P. exsudans, Zucc.
Mexico.
I find the name *P. bryoniæfolia* in some garden catalogues, and which I take to refer to the plant here cited.
28. **P. Mülleriana**.
Disemma Mülleriana, Regel. MSS.
Disemma coccinea, Hort. Melbourne, fide Regel.
Australia.
29. **P. Herbertiana**, *Ker.*, Bot. Reg., t. 737; Benth. Fl. Austral., iii., 311.
Disemma Herbertiana, DC. Prodr., iii., 333.
Australia.
30. **P. cinnabarina**, *Lindl.*, in Gard. Chron., 1855, p. 724, with figure. [See woodcut on page 134.]
Australia.
31. **P. Banksii**, *Benth.*, Fl. Austral., iii., 312.
P. coccinea, Solander.
Disemma coccinea, DC. Prodr., iii., 332.
Australia.
32. **P. glabra**, *Wendl.*, Coll. Plant., i. (1805), f. 17.
P. adiantifolia, *Ker.*, Bot. Reg., t. 233.
Disemma adiantifolia, DC. Prodr., iii., 333.
Norfolk Island.
33. **P. aurantia**, *Forst.*, Prodr., 326.
Disemma aurantia, Labill., Sert. Caled., t. 79.
New Caledonia.
34. **P. Maximiliana**, *Bory.*, Ann. Sc. Phys. Génév., ii., 149, t. 24; Mast. in Flor. Brasil., l.c., 592.
P. discolor, Link & Otto, Ic. Pl. Select. Hort. Berol., i., 13, t. 5; Loddiges Bot. Cab., 565.
P. retusa, Hook. et Arn., Bot. Misc., iii., 325.
P. vespertilio, *Ker.*, Bot. Reg., t. 597 excl. syn.; Lemaire, Ill. Hortie., 1869, misc., p. 1, not of Linnæus.
Brazil.
35. **P. punctata**, *Linn.*, Amœn. Acad., i., 10, f. 12; Cav. Diss., vi., t. 269; Mast. in Flor. Brasil., l.c., 593.
Brazil, Peru, Guayaquil.
36. **P. Swartzii**, Mast. in Fl. Brasil., l.c., 556.
P. rotundifolia, Swarz. non Linn.
West Indies.

I enter this with doubt, never having seen it in cultiva-



PASSIFLORA CINNABARINA, Lindl. (see page 133.)

tion, but, as it has been confounded with the true *P. rotundi-*

folia, Linn., it may be in some botanic garden under that name.

SUBGENUS 3. MURUCUIA.—Climbing shrubs or herbs. Bracts small, scattered; membranous corona flat, not folded, entire or filamentous at the margin.

SECTION 1. EU-MURUCUIA.—Membranous corona springing from the throat of the flower-tube, erect or deflexed.

37. *P. Murucua*, Linn., Cav. Diss., x., 287; Bot. Reg., t. 574; Mast. in Flor. Brasil., l.c., 557.

Murucua ocellata, Pers. Ench., ii., 222.

West Indies.

38. *P. perfoliata*, Linn., Bot. Reg., t. 78; Jacq. Hort. Schönbr., ii., 28, t. 182; Mast. in Flor. Brasil., l.c., 557.

P. cepheleima, Bory., Ann. Génév., ii., 152, t. 22, f. 2.

P. normalis, Linn., Amœn. Acad., v., 408.

West Indies.

39. *P. oblongata*, Swarz., Fl. Ind. Occ., ii., 1135.

West Indies.

Var. *LYRIFOLIA*, Tussac.

40. *P. cuprea*, Linn., Amœn. Acad., i., 219, t. 10., f. 3; Jacq., Ic. Pl. Rar., t. 606; Dill., Hort. Eltham, 138, t. 165; Mast. in Flor. Brasil., l.c., 558.

Var. *Cavanillesii*, Mast., l.c.

P. cuprea, Cav. Diss., x., t. 273.

P. Cavanillesii, DC. Prodr., iii., 323.

West Indies.

SECTION 2.—Membranous corona springing from near the base of the flower-tube, erect or deflexed.

41. *P. sanguinolenta*, Mast., Gard. Chron., 1868, p. 1162; 1874, ii., p. 227, in Flor. Brasil., l.c., 559, t. 128, f. 3. Columbia, Peru? [Pl. VIII.]

P. sanguinolenta.

This species was first described from specimens sent me by M. Linden, and from the collector's notes. Quite recently, fresh specimens have been forwarded by Messrs. Rollisson, which differ somewhat from those originally examined. The plant is pubescent, or villose, rather than pilose; the flower is of a rose-pink colour, not reddish-violet, the flower-tube is sulcate and lobed at the

base, the sepals are 3-nerved, and spread horizontally. The membranous corona is slightly plicated, and the threads immediately above it are more slender than in the original specimen. The ovary is longitudinally ribbed. By a misprint the leaves are described as tri-lobed in the Flora Brasiliensis. The plant is very curious, and its position in the genus not free from doubt. It is nearly allied to *P. reflexiflora*.

SUBGENUS 4. GRANADILLA, DC.—Climbing herbs or shrubs provided with tendrils. Bracts 3, large, leafy or coloured; flower-tube bell-shaped, fleshy; petals 5, filamentous corona in many rows; membranous corona springing from near the middle of the tube.

SECTION 1.—Bracts united at the base.

42. *P. maliformis*, Linn., Amœn. Acad., i., 220, t. 10, f. 5; Mast. in Flor. Brasil., l.c.; Jacq., Eclog., ii., t. 121; Bot. Reg., t. 94; Triana & Planch., l.c., 149.

P. ornata, H.B.K., Nov. Gen. et Sp., ii., 129. "Sweet Calabash."

Brazil, West Indies.

43. *P. ligularis*, Juss., in Ann. Mus., vi., tab. 40; Mast. in Fl.; Brasil., l.c., 560; Bot. Mag., t. 2967.

P. Loweii, Heer in Regel Garten Flora, 1852, p. 69, t. 9.

? *P. serratistipula*, DC., Prodr., iii., 328.—Central America, New Granada, Mexico.

44. *P. triloba*, Ruiz et Pav., Mast. in Fl. Brasil., 560.

P. colubrina, Poepp. et Endlich., Nov. Gen., ii., 58.

Peru.

This is in the list of species cultivated in the St. Petersburg garden, and forwarded me by Dr. Regel.

45. *P. serrata*, Linn., Amœn. Acad., i., 232, f. 10; Cav. Diss., x., 449, t. 296; Mast. in Flor. Brasil., l.c., 595, tab. 113.

? *P. Sellowii*, Dehnhart, Rivista Napol., i., 3, p. 180.

West Indies, Guiana, Peru, Brazil.

SECTION 2.—Bracts free.

46. *P. quadrangularis*, Linn., Jacq., Am., 231, t. 143; Trans. Linn. Soc., ii., 3; Bot. Reg., t. 14; Cav. Diss., x., 283; Bot. Mag., t. 2041; Mast. in Flor. Brasil., l.c., 595. Tropics of the Western Hemisphere; generally cultivated.

The plant grown in most gardens under this name has fruit of the size and form of a swan's egg, and differs in the corona from *P. alata* and *P. macrocarpa*.

47. *P. alata*, Aiton, Hort. Kew., iii., 306; Linn. Trans., ii., 3; Bot. Mag., t. 66; Lodd., Bot. Cab., t. 246; Mast. in Flor. Brasil., l.c., 596, tab. 114.

? *P. tetradena*, Vand., ex DC. Prodr., iii., 331.

? *P. pyriformis*, DC. Prodr., iii., 331.

P. pedunculata, Hort.

P. angulata, Hort.

Var. 1. *BRASILIANA*, Desf., Cat. Pl. Hort. Paris., ed. iii., 411.

P. phœnicea, Lindl., Bot. Reg., t. 1603.

P. maliformis, Vell., Flor. Flum., ix., t. 73; not of Linnæus.

P. oviformis, Roemer, Synops. Monogr., ii., 167.

Var. 2. *LATIFOLIA*.

? *P. latifolia*, DC. Prodr., iii., 328.

Var. 3. *MAURITIANA*.

P. mauritiana, Du Petit Thouars, in Ann. Mus., vi., t. 65.

P. masoarensis, Presl., Bot. Bemer., 72.

Brazil; var. 2, Peru; var. 3, Mauritius.

The synonym *P. latifolia*, DC., may belong to *P. macrocarpa*.

P. alata may be known by its narrowly-winged stems, distant secondary nerves, small stipules, and pyriform or obovoid fruit in addition to the characters of the corona, which are very distinct.

48. *P. macrocarpa*, Mast., in Gard. Chron., 1869, 1012; and in Flor. Brasil., l.c., 598, tab. 115.

P. Hulletti, of some gardens.

North Brazil, Peru.

This is the large-fruited Passion-flower rendered so famous some years since from the exaggerated accounts published of it by a notorious impostor. Messrs. Triana & Planchon (Ann. Sc. Nat., 1873, tom. xvii., p. 147) are of opinion that my *P. macrocarpa* is the same as the large-fruited variety of *P. quadrangularis* mentioned by Jacquin. I have already given my reasons for dissenting from this view, and can only now repeat my conviction formed after the repeated examination of dried and living forms, including one of

Jacquin's types, that *P. quadrangularis* with deeply-winged stems and oviform fruit, *P. alata* with narrowly-winged stems and obovoid or pyriform fruit, and *P. macrocarpa* with deeply winged stems and very large, oblong, obtuse, sulcate fruits (all three, moreover, differing materially one from the other in the arrangement and number of the parts of the corona)—are specifically distinct. With all deference to Messrs. Triana & Planchon, whose opinion is entitled to respectful consideration, I must still consider *P. macrocarpa* as totally distinct. My reasons for so doing are stated at length in Gard. Chron., 1869, 1012, and the plates in the Flora Brasiliensis above cited will show more clearly than words would do the great difference between the flowers of *P. alata* and *P. macrocarpa*. I have now repeatedly seen the three species as grown in English gardens side by side, and cannot doubt their distinctness. At Kew, in the Palm Stove, *P. quadrangularis* and *P. macrocarpa* are grown side by side, and no one who sees the two in juxtaposition in flower and fruit would confound them. The characters derived from the foliage, stipules, and wings of the stem are, it is true, less trustworthy. The question remains whether there is a large-fruited variety of *P. quadrangularis*, or whether Jacquin's variety, *sulcata*, should be referred to *P. macrocarpa*.

Messrs. Triana & Planchon think it possible that Jacquin may have confounded *P. alata* with *P. quadrangularis*, and that the true *P. quadrangularis* is what he calls the variety *sulcata*. But Jacquin's description of the petiolar glands and of the fruit is that of *P. quadrangularis*, and not of *P. alata*. The type specimen of Jacquin in the British Museum does indeed bear out MM. Triana and Planchon's opinion, so far as relates to the narrow wings to the stem; but the petiolar glands are six in number, and the nerves of the leaf are not arranged as in *P. alata*.

It must also be borne in mind that the plants in question have been cultivated for a long series of years over a wide range, and that seminal and hybrid varieties have in consequence been produced.

49. *P. tiliæfolia*, Cav., Diss. x., t. 285; Mast. in Flor. Brasil., l.c., 562.

Peru.

This is mentioned in garden catalogues, but I have not seen a living specimen.

50. **P. amabilis**, *Hook.*, Bot. Mag., 4406; Mast. in Flor. Brasil., l.c., 502.
South Brazil.
51. **P. laurifolia**, *Linn.*, Cav. Diss., x., t. 284; Jacq., Hort. Vindob., ii., 102; Trans. Linn. Soc., ii., t. 4; Bot. Reg., i., 13; Mast. in Flor. Brasil., l.c., 603.
P. acuminata, DC. Prodr., iii., 328.
P. tinifolia, Juss. in Ann. Mus., vi., 113, t. 41, f. 2.
"Water-lemon."
Brazil, Guiana, West Indies.
52. **P. serratifolia**, *Linn.*, Amœn. Acad., i., 217, t. 10, f. 1; Bot. Mag., t., 651?; Mast. in Flor. Brasil, l.c., 563.
Mexico.
53. **P. coccinea**, *Aublet*, Guiana, ii., 828; Cav. Ic., 452, t. 280; Mast. in Flor. Brasil., l.c., 605.
P. fulgens, Morren, Belgique Horticole, xvi., 1866, t. 13, p. 193.
P. Monnieri, Buchoz, Herb. Col. de l'Amér. (1783), tab. 35.
Brazil, Guiana, Peru.
Two varieties are described.
Var. 1. MINOR, and
Var. 2. VELUTINA.
Passiflora velutina, DC. Prodr., iii., 327.
54. **P. mucronata**, *Lam.*, Enc., iii., 33; (1789) Cav. Diss., x., t. 283; Mast. in Fl. Brasil., l.c., 605.
P. albida, Ker, Bot. Reg., t. 677 (1822).
P. pallida, Vell. Fl. Flum., ix., t. 70.
Brazil.
55. **P. pedata**, *Linn.*, Amœn. Acad.; 233, t. x., f. 22; Mast. in Flor. Brasil., l.c., 564.
Guiana, West Indies.
56. **P. quadriglandulosa**, *Rodschied*, Observ., 77 (1796); Mast. in Flor. Brasil., l.c., 607.
Tacsonia sanguinea, DC. Prodr., iii., 334; Bot. Mag., t. 4674.
T. quadriglandulosa, *quadridentata*, and *pubescens*, DC. Prodr., iii., 335.
? *Passiflora guianensis*, Miquel., in Linnæa, xviii., 751.
? *P. Lockharti*, Don, ex Roemer Synops., ii., 183.
North Brazil, Guiana, Trinidad.
57. **P. vitifolia**, *H.B.K.*, Nov. Gen. et Sp., ii., 138; Mast. in Flor. Brasil., l.c., 607; Triana and Planchon, in Ann. Sc. Nat., xvii. (1873), 143.

Passiflora sanguinea, Smith in Rees Cyclop., not *Tacsonia sanguinea* of DC. nor of Hooker.

P. punicea, DC. Prodr., iii., 329.

Tacsonia Buchanani, Lemaire, Ill. Hort., t. 519.

P. servitensis, Karst., in Linnæa, xxx., 163; Fl. Columb. Spec. Select., i., t. 53.

? *P. caraccassana*, Willd.

? *P. multififormis*, Jacq., Fragm., 169, t. 67, f. 1. Leaves only figured.

Brazil, Peru, New Granada.

This varies in the size of the flower, and especially of the bracts. A noble plant.

58. **P. Middletoniana**, Paxt., Mag. Bot., ix. (1842), p. 51. Perhaps a garden hybrid. There is a plant of this species in the succulent house at Kew, but I have not seen the flowers.

59. **P. cincinnata**, Mast., in Gard. Chron., 1868, p. 966, with figure, and in Flor. Brasil., l.c., 609; Hook. Bot. Mag., 5737. [See woodcut on opposite page.]

Brazil.

60. **P. incarnata**, Linn., Amœn. Acad., i., 230, t. 10, f. 19; Cav. Diss., x., t. 293; Mast. in Flor. Brasil., l.c., 565.

Southern States of North America.

61. **P. edulis**, Sims, Bot. Mag., 1989; Sabine in Trans. Hort. Soc. Lond., iii., 99, t. 3; Mast., in Flor. Brasil., l.c., 610.

P. incarnata, var. β ., Bot. Reg., t. 152.

P. diaden, Flor. Flum., ix., t. 90 ?

Brazil. Generally cultivated in the tropics.

This species furnishes the most highly perfumed fruit, of an ovoid or oblong form and purple colour, and is the one most worthy of cultivation for dessert. There are several varieties, or possibly distinct species, as follows:—

Var. 1. VERRUCIFERA.

Passiflora verrucifera, Lindley, Bot. Reg., xxvi., t. 52 (1846). Fruit, greenish-yellow.

Var. 2. KERII.

P. Kerii, Spreng., Syst. Veg., iii., 39.

P. incarnata, var. β *integriloba*, DC. Prodr., iii., 329.

P. incarnata, Ker, Bot. Reg., 332, non Linn.

Var. 3. POMIFERA.

P. edulis, Flor. Flum., ix., t. 89; not of Sims.

Var. 4. RUBRICAULIS.

P. rubricaulis, Jacq., Eclog., t. 169.

? *P. rigidula*, Jacq., Eclog., ii., 124.

? *P. pallidiflora*, Bertoloni, Sylloge plant. Hort. Bonon. (1827). p. 6.



PASSIFLORA CININNATA, Mast. (see previous page.)

62. *P. alba*, Link and Otto, Ic. Pl. Rar. Hort. Berol., t. 33 ;
Mast. in Fl. Brasil., l.c., 611.

P. stipulata, Triana and Planchon, in Ann. Sc. Nat. (1873),
xvii., 152, ? of Aublet.

? *P. subpeltata*, Ortega, Decad., p. 78.

? *P. atomaria*, Planch. MS. (sepals and petals spotted).

Brazil, Mexico, and Peru.

I have elsewhere expressed a doubt as to whether the specimens I have included under this name from Brazil are specifically identical with those from other parts of America, but at the same time I cannot agree with Messrs. Triana and Planchon that Link and Otto's plant (as grown also at Kew and in other British gardens) is identical either with Aiton's *P. glauca*, or with Aublet's *stipulata*. From the former it differs in the leaves, bracts, sepals, and corona, while of *P. stipulata* of Aublet, as already mentioned, nothing is known, except the figure of the leaves. Triana and Planchon also refer to this species *P. atomaria* and *P. subpeltata*, on which points I here offer no opinion.

63. *P. Mooreana*, Hook., Bot. Mag., t. 3773; Mast. in Flor. Brasil., l.c., 566.

La Plata.

64. *P. amethystina*, Mikan., Delect. Flor. et Faun. Brasil., fasc. iv., with good figure; Mast. in Flor. Brasil., l.c., 613.

P. onychina, Lindl. Bot. Reg., new series, t. 21.

Brazil.

65. *P. filamentosa*, Willd., Cav. Diss., x., 461, t. 294; Mast. in Flor. Brasil., l.c., 614.

South Brazil.

Var. PALMATA.

P. filamentosa, var. β , Bot. Reg., t. 584.

P. filamentosa, Bot. Mag., t. 2023.

P. palmata, Lodd., Bot. Cab., 97.

66. *P. actinia*, Hook., Bot. Mag., t. 4009; Flore des Serres., ii., 39; Mast. in Fl. Brasil., l.c., 615.

South Brazil.

67. *P. glauca*, Aiton, Hort. Kew. (1789), ii., 308; Jacq., Hort. Schönb., t. 384, Bot. Reg., t. 88; Mast. in Flor. Brasil., l.c., 567.

P. stipulata, Triana & Planchon, Ann. Sc. Nat. (1873), xvii., p. 152, ? of Aublet.

Mexico, Central America, New Granada.

Messrs. Triana and Planchon refer this to Aublet's *P. stipulata*. See as to this point the note on *P. arborea* and *P. alba*.

68. *P. stipulata*, Aublet, Pl. Guian. (1775), t. 325; Mast. in Fl. Brasil., l.c., 567.
French Guiana.
Aublet's plant is only known to me by the figure above cited, in which leaves and no flowers are represented. As the name occurs in some garden-catalogues, I enter it here; but I have seen no specimen in British gardens under this name. If MM. Triana and Planchon's suggestion be true, Link and Otto's *P. alba*, as well as Aiton's *P. glauca*, belong here. See *ante*.
69. *P. tucumanensis*, Hook., Bot. Mag., 3636; Mast. in Fl. Brasil., l.c., 615.
South Brazil, Tucuman.
70. *P. picturata*, Ker, Bot. Reg., t. 673; Lodd. Cab., 1050; Mast. in Flor. Brasil., l.c., 616.
Guiana, Brazil.
71. *P. cærulea*, Linn., Amœn. Acad., i., 231, t. 10, f. 3; Bot. Mag., t. 28; Mast. in Flor. Brasil., l.c., 617.
South Brazil, Uruguay.
Cultivated in some tropical and sub-tropical regions. It is also quite hardy near London. Many seedling and hybrid varieties exist, some of which may be here cited:—
Var. 1. ANGUSTIFOLIA.
Var. 2. GLAUCA.
Var. 3. IMBRICATA.
Var. 4. ALBA.
Var. 5. NEUMANNI, Paxt, Mag. Bot., xv., 270.
72. *P. reflexiflora*, Cav., Ic. v., 425; Mast. in Flor. Brasil., l.c., 569.
Tacsonia reflexiflora, Juss., in Ann. Mus., vi., 393.
Tacsonia lævis, Benth., Bot. Sulph., 100.
Guatemala, Peru, &c.
Cultivated in the St. Petersburg Botanic Garden.
73. *P. racemosa*, Brotero in Trans. Linn. Soc., xii., 71, t. 6; Mast. in Flor. Brasil., l.c., 618, t. 125; Bot. Reg., iv., 285; Bot. Mag., 2001.
P. princeps of gardens and Lodd. Cab., 84.
South Brazil.
74. *P. Raddiana*, DC. Prod., iii., 329; Mast. in Flor. Brasil., l.c., 619, tab. 126.
P. kermesina, Link and Otto, Verh. des Preuss. Gartenb.

- Verein, ii., t. 15; Bot. Reg., xix., t. 1633; Bot. Mag., t. 3503; Paxt. Mag., i., 25; xiv., 151.
 ? *P. dentata*, Vell., Flor. Flum., ix., t. 94.
 South Brazil.

SECTION III.—Bracts free, leafy; flower-tube short, fleshy: membranous corona plicate as in § *Plectostemma*; habit of § *Granadilla*.

75. *P. Hahnii*, Mast., in Flor. Brasil., l.c., 569.
Distemma Hahnii, Fournier in Revue Horticole, 1869; 430 c., tab. color.
 Mexico.
 I saw this species in flower at the Jardin des Plantes, Paris, in 1870, and was furnished by M. Decaisne with cuttings, which were transmitted to Kew. It is one of the most singular species, and of considerable beauty.
76. *P. pulchella*, H.B.K., N.G. et Sp. ii., 134; Mast. in Flor. Brasil., l.c. 570.
P. rotundifolia, Jacq., Obs., part ii. (1767); not of Linn. or of Swarz.
P. divaricata, Griseb., Bonplandia (1858), p. 7.
P. rotundifolia β *Jacquini*, DC., Prod. iii., 328.
 Central America, Venezuela, &c.

In addition to the preceding species, whose botanical history is more or less well known, there are several other forms named in gardens and garden-catalogues, some of which are probably selected seedling varieties, of well-known species, while others are known to be of hybrid origin. I give a list of these names, but without accepting any responsibility as to their correctness:—

P. aculeata, Hort.

I have no idea what this is.

P. albicans, Hort.

This is probably a misprint for *P. albida*, Ker.

× *P. albo-nigra*, Regel. Gart. Flora (1852), t. 8.

Said to be a cross between *P. alata* and *P. Raddiana*.

× *P. amabilis*, Hort.?

This is said to be a hybrid between *P. racemosa* as the ♀ and *P. alata* ♂. I have not seen it, unless it be the

same as the species of the same name. See *ante*, No. 50.

- × **P. alato-cærulea**, W. Mast. in Bot. Reg., 848.

A hybrid between the species named, raised in the Canterbury nurseries.

? **P. angulata**, Hort. Probably a misprint for *P. alata*.

- × **Bijou**.

Said to be a hybrid between *P. racemosa* and *P. Raddiana*.

- × **P. Belottii**, Hort., Regel. Gart. Flora (1852), 44; Gard. Mag. Bot., i., 9.

Said to be a cross between × *P. cæruleo-racemosa* and *quad. rangularis*.

- × **P. Buonaparteæ**, Hort.

Probably a hybrid between *P. alata* and *P. quadrangularis*.

- × **P. cæruleo-racemosa**, Sabine; Trans. Hort. Soc., iv., 9; Lodd. Cab., 573.

A well-known hybrid between the two species above-named. In the list kindly forwarded me by Dr. Regel a variety of this (?) called *Cleweriana* is mentioned.

P. cæruleo-Kermesina.

Probably a cross between *P. cærulea* and *P. Raddiana*.

P. cardinalis, Hort. Laurentius.

P. chinensis, Hort.

Is probably a form of *P. cærulea*.

- × **P. Colvillei**, Sweet Brit. Fl. G., ii., 126.

Said to be a hybrid between *P. cærulea* ♂ and *P. incarnata* ♀. See *ante*, No. 71.

- × **P. Decaisneana**, Flore des Serres, viii., 848; Revue Horticole, 1855, 15.

Said to be a hybrid between *P. quadrangularis* and *P. alata*.

P. fragrans, Hort.

Said to be = *P. Middletoniana*.

P. Countess Gigliucci ?.

P. Hartwiesiana, Hort. Rollison, is probably a seedling variety of *P. cærulea*, with white flowers.

P. helleborifolia, Wallis.

Of this I have seen a sketch by its discoverer. It is apparently very near to *P. pedata*, but may be distinct.

- P. hircina*, Hort. = *P. fetida*.
- P. Hulletti*, Hort. = *P. macrocarpa*, Mast.
- × *P. hybrida floribunda*, Hort.
Apparently a cross between *P. cærulea* and *P. Raddiana*.
- P. Imperatrice Eugénie*. Illustr. Horticole, 1858, 175.
Apparently a cross between *P. cærulea* and *P. quadrangularis* or *P. alata*.
- × *P. Innesii*, Mast. in Gard. Chron., 1870, 891.
A cross between *P. alata* ♀ and *P. macrocarpa* ♂.
- P. Karsteniana*. ? = *P. bryonioides*.
- P. Lamberti*, Hort.
- × *P. Lawsoniana*, Mast. in Gard. Chron., 1868, 1288.
A cross between *racemosa* ♂ and *alata* ♀.
- × *P. Lemicheziana*.
- P. Loudoni*, Hort.
I have met with different forms under this name, but I have reason to think the original *P. Loudoni* was a cross between *P. Raddiana* and *P. racemosa*.
- P. maculata*, Hort. ?
- × *P. Madonna*.
Said to be a cross between *P. racemosa* and *P. Buonaparteæ*.
- P. marmorea*, Hort. Linden = *Ophiocaulon cissampeloides*. Mast.
- P. Mayana*. A form of *cærulea* probably.
- × *P. Munroii*. Mast. in Gard. Chron., 1868, 1288.
A cross between *cærulea* ♂ and *alata* ♀.
- × *P. Count Nesselrode*.
- P. patula*, Hort. ?
- P. semiorbicularis*, Hort. Petrop., said to be Brazilian.
- P. tripartita*, Hort. ?
- P. ulmifolia*, Hort. ?
- P. Comte de Woronzoff*.
Said to be a form of *P. Raddiana*.

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- × Colvillei, 145
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- × Countess Gigliucci, 145
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- cuprea, n. 40, 135
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- dentata, n. 74, 144
- diaden, n. 61, 140
- difformis, n. 3, 128
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- edulis, var. *pomifera*, n. 61, 140
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XXV. On the Mildew of Hollyhocks. By the Rev. M. J.

BERKELEY, M.A., F.R.H.S.

THE late Dr. Montagne published in the "Flora Chilena" (1852) a species of Puccinia under the manuscript name which Bertero had given it some years before, *P. malvacearum*. He found it on several species of Malvaceæ, and stated that it is very common. The same species had already been sent by Mr. Bridges from Valparaiso, and bears the MS. name in my Herbarium of *P. foveolaris*, under which, however, it was never published.

After the lapse of several years Mr. Carson* brought me from Melbourne (Australia) specimens of the same Puccinia on the leaves of *Malva rotundifolia* and the common Hollyhock, with the information that it is so common on Hollyhocks that the cultivation of them is hopeless.

On several occasions the same complaint has been made in this country, and at the same time it appeared that the parasite was attacking different species of Mallow in several parts of the country. Mr. Broome first sent me specimens, and I have since received it from Mr. N. Reid, in July, 1873.

M. Durieu de Maisonneuve received the same on indigenous species of Malva in April, 1873, and has given an account of its sudden appearance and prevalence in France, in the department of La Gironde.†

* See *Gardeners' Chronicle*, Sep. 2, 1865.

† Actes de la Société Linnéenne de Bordeaux, t. xxiv., 1873.



It seems quite certain that its appearance in this country has been equally recent, as no trace of it appears in any of our Floras, nor, with the exception just mentioned, is there any specimen amongst the numerous individuals of the genus from various quarters in my Herbarium. I have, indeed, another species on Malvaceæ—viz., *Puccinia Abutili*, B. & Br. Fungi of Ceylon, No. 816, on *Abutilon graveolens*, which also has been gathered by Mr. Ayres, on a species of *Sida*, in Mauritius. This has much shorter, obtuse, and very different pseudospores. I have also a closely-allied species, *Puccinia sepulta*, B. & Curt., Proc. Am. Ac. iv., p. 126, on some uncertain plant.

P. malvacearum is figured by Corda from specimens communicated by Dr. Montagne, Ic. Fasc., vi., p. 4, t. 1, f. 12, and my own analysis exactly accords with his figure.

Mr. Carson's specimens were received in this country in 1865 but we have no information as to the time of the first appearance of the parasite in Australia. It would perhaps be assuming too much, in the absence of direct information, to give an opinion that the present disease might possibly have been derived from those specimens. Some years, however, elapsed before Hollyhocks were attacked in this country, and more before the parasite spread to our common Mallows.

The sudden appearance of parasites is extremely curious. Nothing was known of *Peronospora infestans* in Great Britain till 1844. There is not a trace of it in any old Herbarium—as, for example, in those of De Candolle or Sowerby, though species quite as obscure are contained in each, and it appears more than probable that it came from Chili into the United States, from whence it travelled here, as the disease, according to Monsieur Gay, has been known in Chili from time immemorial, though the cause was not ascertained. As the *Peronospora* can be conveyed by tubers, its introduction is readily accounted for, but unless the Hollyhock disease in this country and in France was really derived from the Australian specimens, which is not impossible, we can only have recourse to the fortuitous introduction by means of the air. After the recent observations of Dr. Cunningham at Calcutta, which show that such a marvellous host of Fungus spores float about in the air, in which they seem even to germinate, and so are at once ready for propagation where they find a fitting resting-place and favourable climatic conditions, its introduction need not be matter of surprise.

The characters of the species as given by Montagne in the "Flora

Chilena" are:—"Hypophyllous; sori scattered, hemispherical, at first covered by the cuticle which remains attached in the centre, umbilicate beneath, the border rufous; spores densely crowded, ovoideo-oblong, even, brown, somewhat constricted, in the middle obtusely acuminate, with very long hyaline pedicels." (See fig, p. 150.) *P. abutili*, on the contrary, has very short, obtuse pseudospores, scarcely constricted in the middle, and very short pedicels.

It is now some years since I received from Lieut.-Colonel Grant, of Wellington, Neilgherries, some leaves of Orange and Mango which were infested with the oidiod form of some *Erysiphe*. It was stated that neither hot and dry nor wet weather appeared to affect it, and that it was very destructive. This, indeed, was plain, from the appearance of the leaves, as the parenchym was completely exhausted where the parasite was attached, and had become brown. Our attention has lately been recalled to the subject by a sprig of Orange from Mooloya, Hewahette, Ceylon (4000 feet), sent by Dr. Thwaites, under No. 1230, too late to be included in the account of Ceylon Fungi lately published in the journals of the Linnean Society. The Wellington specimens exhibit, except in one minute spot, nothing more than a form of *Oidium* with rather long, almost truncated joints. In the Ceylon specimen there is a trace of these, though most have been absorbed, and in their place a multitude of both conidio-morphic and spherical pycnidia, pouring out a profusion of stylospores, exactly as in the figure which Tulasne gives in his *Carpologia* i., t. 5, fig. 3. It is most probable, therefore, that the species is one of the forms of *Erysiphe communis*, and it is the more interesting because the genus is not hitherto recorded as occurring in the Eastern Indies or the neighbouring islands. The perfect fruit has not yet been found. As the Vine mildew has extended to tropical climates, and is capable of being propagated on other plants, it becomes a matter of interest to inquire whether the parasite in question is not identical, and whether it has not been introduced with it. It is not confined to either surface of the leaf. The question of its possible introduction is the more important in consequence of the sudden irruption into Australia, and more recently into Europe, of *Puccinia malvacearum*; and it is well that the matter should be recorded, as it may throw light on future observations, should the pest spread either on Orange trees or Mango.

As it appears to be quite superficial, there can be no doubt that it would be checked by sulphur. We have not heard of its occur-

rence on Orange leaves, either in the South of Europe or the Azores ; but botanists should look out for it.

XXVI. On a pink sport of the *Gloire de Dijon* Rose. By M. T. MASTERS, M.D., F.R.S.

OUR first knowledge of this beautiful variety was derived from a specimen forwarded by Mr. A. S. Kemp.* From the history given by that gentleman it appears that the plant was struck as a cutting four years since, and is growing on its own roots, in ordinary garden soil. Up to the year 1872 nothing unusual presented itself, but in the last-named season all the flowers that it produced were of a rosy pink colour. A plant of the same variety growing in the same border, within a distance of a foot, is not the least changed.

The outer petals of *Gloire de Dijon* are frequently tinged with pink, and markedly so before the flower is fully expanded, and in the flowers produced in autumn ; hence it is not surprising that some of our Rosarians should have thought Mr. Kemp's specimens presented merely an exaggeration of this tendency. Thus we find Mr. D. T. Fish† expressing himself in relation to this subject as follows :—

“This may be a case of reversion (as suggested) but more probably it is an affair of local peculiarity of soil, or constitution . . . I have even observed marked differences of shade in the same, plant on different branches. Again, this Rose on its own roots, or on the Manetti and rooted over or above the graft, is more apt to show a pinky tint than over the briar, and these alterations of colour are more common towards the autumn than later (? earlier) in the season. Again, few things are more inconstant than the colour of Roses. . . . Are they all reverting,” proceeds Mr. Fish “to their remote progenitors? and what were the colours and shapes of these, and why should the modern ones hie back in colour, and assume the forms of the Roses of long, long ago ? ”

The questions here propounded by Mr. Fish go to the root of the matter, and are by no means easily answered. Before offering any remarks on the possible mode of origin of this variety, it may be

* Gard. Chron. 1872, 1160, col. A.

† Gard. Chron. 1872, 1230, col. A.

well again to cite Mr. Fish, the more so as, before he had seen the variety himself, he 'appeared to consider it as an instance of heightened colouring only. At page 1296 of the volume already cited, however, Mr. Fish, having then had the opportunity of examining specimens for himself, states that "it is wholly different from any of those suffused with pink before adverted to by me. It is so good a pink as to be a wholly new and distinct variety. We have no rose of the same shade that I am aware of. It is more pink than *La France*, or *Bougère*, or *Adam*, and not so deep pink as *Baron Gonella* (Bourbon). Perhaps the nearest approach to the colour of the pink *Gloire de Dijon* would be arrived at by blending the *Baron Gonella* and *La France*. The kind is a fine dark pink, as much so as *Coupe d'Hebe*; in leaf and strength of growth it retains the true character of *Gloire de Dijon*. The colour is not successfully rendered by the artist in the accompanying plate. (Pl. XI.) Nothing need be added in recommendation. A delicate pink *Gloire de Dijon* will at once take its place in the first rank of the best Roses everywhere." This estimate of the value of this new variety, from the florist's point of view, was endorsed at the time in a letter to the writer of this note by the Rev. S. R. Hole.

The history of this Rose during the present season, as told by Mr. Fish (Gard. Chron. 1873, 1180), presents some further points of interest from a physiological point of view. Mr. Fish, it appears, inserted a bud from Mr. Kemp's plant into a briar stock late in September, 1872. The briar was growing on clay soil in a damp place. The bud "took," remained dormant during the winter, and broke into a strong shoot in the spring. This shoot ultimately divided into three sub-divisions, one of which produced a truss of flower-buds, all of which were removed but two, which were allowed to flower, and produced pink roses of about the shade of *Baron Gonella*. Mr. Fish, in recording these facts, considers that the conditions under which these flowers were produced were such as might have been expected to wash out the pink colour, had it had but a slight hold on the variety, by the mere flush of sap, but nothing of the kind has happened."

We may now allude to a second specimen of pink *Gloire de Dijon* which was sent to us in September of the present year by Mr. A. Ingram, of Hardwicke Grange, Shrewsbury (see Gard. Chron. 1873, 1210, 1243). The history of Mr. Ingram's Rose differs somewhat from that of Mr. Kemp's. While the latter was grown on its own roots, Mr. Ingram's was budded on the Manetti stock. It grew in a border among other roses, and produced in 1872 a large number

of flowers not differing from those of ordinary *Gloire de Dijon*. In the spring of the present year (1873) it was moved and planted against a north wall, in similar but somewhat heavier soil than it was growing in before. It was long in starting into growth, but ultimately made several vigorous shoots, on one of which, and that the weakest, the pink flower truss was produced.

It is, of course, not absolutely certain that Mr. Kemp's variety and Mr. Ingram's are the same. No opportunity of comparing the two side by side has yet been afforded, and therefore in discussing the possible causes of the change it is more prudent to consider the two cases separately, in spite of the strong impression on the mind of the writer that the two varieties are so nearly the same as to entitle them to be called by the same name.

Reverting then to Mr. Kemp's rose, we may ask to what circumstances are we to attribute the change? It cannot in this instance have arisen from budding or grafting, because we are assured no such operation was effected. It may have arisen from reversion or "sporting" to an ancestral form. Some of the progenitors of this Rose may have had deep-coloured flowers. Successive generations have participated to a slight extent in the colouring derived from their progenitors, but suddenly this one has gained a full measure of the liquid pigment on which the colour depends. Darwin's theory of pangenesis affords a partial explanation of how this may occur. An hereditary taint, so to speak—a gemmule—according to this hypothesis is transmitted from organism to organism. In one generation it may be dormant and inactive, in another it may be endowed with full vitality, become intensified, and reproduce itself with rapidity under the influence of favourable circumstances. But what those circumstances are, and how they act, the hypothesis in question does not tell us. That this particular rose, like thousands of similar cases, may have been produced in this manner is of course possible. No one can deny that it may have been so. The suddenness of its appearance is consistent with what is usually observed in similar instances, and so far is favourable to the notion. On the other hand, a sport or reversion is usually local, and presents itself on one particular branch, or on a few only. Many of our garden varieties of Rose have originated in this way.* If we say, as

* A similar instance of a pink-coloured sport in Céline Forestier was shown before the Society in July, 1873. The canary-yellow coloured Rose called *Isabella Sprunt* is said to have been a sport from the apricot-coloured *Saffrano*. See Carrière, "Production et fixation des Variétés dans les végé-

we are quite justified in doing, that this is a mere case of the agency of some local circumstances enhancing and heightening the colour, we still do not get away from the reversion theory, and we do not gain any explanation of the fact that the adjoining plant was unaffected.

So far as we saw there was no change in the kind, but only in the degree of colour. The colouring matter of the Rose is a liquid contained in certain cells of the petals. Now, in this case, a few more of the cells than is customary were filled with colouring matter. Perhaps, for we did not examine the flower, as to this point, the cells with the coloured juices overlaid one another, and thus produced a deeper tint, as we know happens in analogous cases. But supposing that this, or indeed any of the suggested explanations, be true, what caused the sudden change, and why was the sister plant only a few inches off, grown under apparently precisely similar circumstances, unaffected? If we attempt to account for it by some individual peculiarity of constitution, by some idiosyncrasy, as a medical man would say, we only confess, but do not conceal, our ignorance by the use of a technical phrase. Better perhaps to say at once we don't know.

With reference to Mr. Ingram's case the conditions are different. The plant was grafted on the Manetti, a pink-flowered variety.

Now, there are cases wherein grafting or budding seems to alter the character of the scion. For a long time gardeners, as a rule, refused to believe in any such reciprocal action of stock and scion, but the evidence is becoming too overpowering to allow the matter to remain doubtful. It is not necessary, however, to enter into this subject here, as the probability that Mr. Ingram's Rose owed its peculiarity to grafting or budding is extremely slight.* The only explanation then that can be offered in this case is, that it is a bud-variation or "sport." As such, as before explained, it may be due to a reversion to the character possessed by some of its progenitors. In order to ascertain this point it is necessary to know the parentage and genealogy of *Gloire de Dijon* Rose, but this we have at present failed to obtain.

Mr. W. Paul, whose interest in the scientific aspects of Rose-

taux," p. 35, wherein a list of such roses is given. See also Darwin, "Variation of Animals and Plants," p. 379 (1868), where numerous references to the literature of the subject are given, and an article on "Bud Variation," in "Popular Science Review" (1872).

* For a brief resumé of the more important facts relating to "Graft-hybridisation," the reader is referred to an article in the "Popular Science Review," 1871, p. 141.

growing is as keen as his skill in their practical culture is great, tells me that although he was the first of English nurserymen to receive and exhibit this Rose, yet he does not know its history. Perhaps the publication of this note may elicit the facts of the case. It must be remembered, however, that Rose-growers and florists in general, seldom either conduct or record their experiments with that scrupulous regard to accuracy and jealous exclusion of possible sources of fallacy, which the scientific experimenter demands, and hence it may be that the pedigree of a florist's flower, though given in all good faith, may yet scarcely be a trustworthy document in the eyes of a physiologist.

Lastly, it remains to be said that an opinion has been expressed by some, Mr. W. Paul among others, that this pink variety of *Gloire de Dijon* Rose is the same variety as that known as *Belle de Bordeaux* or *Gloire de Bordeaux*. But if this be so, then the question arises, what was the origin of *Belle de Bordeaux*? Is it not likely that it too was a seedling variety, or a sport (bud-variety) from *Gloire de Dijon*? *

In these matters the practical florists have an advantage over their scientific brethren. The Rosarians have, in some way or another, become possessed of a beautiful addition to their already rich store, and are content with the fact as it stands. The physiologists are left to pore over the why and wherefore. It is most desirable that each should help the other, the florist by carefully noting the phenomena as they present themselves to him, the physiologist by co-relating the facts supplied by the florist, supplying their interpretation, and deducing from them rules or laws which will guide the florist in his culture. It requires no great stretch of faith to foresee the time when the physiologist will be able to supply the florist with a clue whereby he may, within limits, be able to produce at will a pink *Gloire de Dijon* Rose, or whatever else the needs or caprice of the time may dictate.

To do this requires on the part of the Rosarian strict accuracy of experiment and faithfulness of record: Too often it is to be feared the pedigrees given are at best mere guess-work.

* Since this was written we have ascertained that *Belle de Bordeaux* was a seedling variety from *Gloire de Dijon*, raised by M. Lartay.

XXVII. Pollen-Eating Flies. By A. W. BENNETT, M.A, B.Sc.,
F.L.S.

[Read Dec. 3, 1873.]

THE reading of the paper entitled, "Do Flies eat Pollen?" before the Scientific Committee of the Royal Horticultural Society on Dec. 7, 1872,* called forth the suggestion from the Rev. M. J. Berkeley that it would be desirable to ascertain whether the pollen-grains are actually digested by the insect, or whether they pass through its intestinal organs unchanged. It was then too late to prosecute the enquiry during that season; but in the course of the present autumn I have made some further experiments. My hunting-ground was, as before, the "Compositæ" bed in the herbaceous department of the Royal Botanic Society's gardens, and the species examined chiefly the same as before, *Eristalis tenax* and *Syrphus clypeata*, both belonging to the family of Syrphidæ. As before, I found in almost every case the stomach perfectly loaded with pollen-grains, all presenting the form characteristic of plants belonging to the order Compositæ, though varying considerably in size, indicating probably that they belonged to several different species of *Aster*. The bodies of the common house-fly and of other Diptera belonging to the family Muscidæ, which were also captured browsing on the Asters, were in most cases entirely destitute of pollen, in other cases a few solitary grains were found, probably accidentally sucked up with their liquid food through the proboscis.

A more careful examination under the microscope of the contents of the stomachs of the Syrphidæ showed the pollen-grains in every possible state of disintegration and digestion. It is clear that after remaining for a short time in the stomach, the coating of the pollen-grain (extine and intine) gives way, and the liquid contents of the grain are digested by the assimilating organs of the insect. Large accumulations of the coats or skins of the pollen-grains were found evidently on the point of being expelled from the intestines as indigestible exuviae, having then assumed a very deep orange colour. There can be no doubt, therefore, that to a large class of Diptera, pollen forms a not inconsiderable or unimportant article of food.

* See Journal of the R.H.S., n.s., vol. iv., p. 30.

XXVIII.—Report of the Chiswick Board of Direction.

[February, 1874.]

THE Board of Directors have to report that the garden labour at Chiswick, which for the last year or two has been very much directed towards the various works of re-arrangement, consequent on the recent curtailment of the area of the Garden, has, by reason of the completion of those works, been available for other purposes, so that during the season of 1873 it was found practicable to take up a fair share of the experimental trials of Vegetables and Flowers, for which, in conjunction with the supply of decorative plants for Kensington, the Garden is now more especially designed. These trials were not indeed wholly suspended during the period when the alterations were in progress, but they have now again assumed in some degree the more extended form and comprehensive character which the importance of the subject demands.

In the FRUIT and VEGETABLE DEPARTMENT the distributions to Fellows and Correspondents of the Society comprise 60,000 packets of Vegetable Seeds, and 1543 packages of Cuttings of Vines and Scions of Fruit Trees. Amongst the latter was an important collection presented to the Horticultural Society of Victoria, of which the officials of that Society report that, "owing to the lengthened voyage of the ship by which they were forwarded, a large number perished."

A considerable collection of Cherry Trees of pyramidal form, were, some few years since, got together, but they proved to be extremely unsatisfactory, owing partly to the difficulty of efficiently protecting them; they have therefore been dispensed with, and have been replaced by young trees planted against the boundary walls, and which are to be trained as single cordons.

An extensive collection of pyramidal Plum Trees, which had become too much crowded, have been transplanted and re-arranged at wider intervals so as to admit of their fuller development.

The trees planted out in the Orchard House had grown so freely that they had already become too much crowded; and as thinning out in some form was necessary, the opportunity has been taken to lift and pot the pyramidal trees, chiefly Peaches and Nectarines, and to re-arrange the standards, which are still planted out. In this way the overcrowding of the trees may be more readily prevented by the temporary removal of the potted trees.

Many new varieties of the Grape Vine have been introduced to our Gardens within the last few years, and it has been thought

desirable to devote a house to the growth of these, with a view to a closer observation of their peculiarities and merits. The small curvilinear Vinery in which the different sorts of White Muscats had been brought together some years since for a like object (which has been accomplished), has been set apart for this purpose.

The experimental trials and comparisons of the varieties of different Vegetables have, during the past season, been taken up chiefly by such important subjects as Potatoes, Peas and Kidney Beans. Of the Potatoes the trial has been very complete and satisfactory, some 271 reputed varieties having been planted, though this number has been greatly reduced by ascertaining that many of the names are synonyms of others. Some of the more recent American varieties have proved to be highly meritorious, as have some of the English seedlings raised by Mr. Robert Fenn, of Woodstock, and nine First-Class Certificates have been awarded by the Fruit and Vegetable Committee. The trial of Peas has been a continuation of that of the previous year, and in this case five Certificates have been awarded, all to novelties raised by T. Laxton, Esq., of Stamford. The trial of Kidney Beans, though only a partial one, has resulted in the award of five First-Class Certificates. These trials will all be duly reported on in the *Journal*.

It is proposed to recommend to the Committee to continue during the present year the critical examination of Potatoes and Kidney Beans, and to add thereto the varieties of Celery, which now seem to be in need of another revision, with the view of ascertaining which are the most profitable and meritorious.

In the FLORAL DEPARTMENT similar activity has been displayed. The distributions comprise 60,000 packets of Flower Seeds, 3825 Plants allotted by ballot, and 873 packages of Cuttings of plants; while for the Society's own use, at Kensington, 12,876 Plants have been grown and furnished for the decoration of the Conservatory; 63,016 Plants have been expended on the summer bedding, and 31,833 on the spring bedding of the past year. In addition to these, 37,917 Plants have been supplied during the months of November and December to furnish the display during the ensuing spring.

The comparative trials of Flowers have been chiefly amongst Zonal Pelargoniums (which are so numerous and important as to require annual revision), Fuchsias, Pentstemons, and Phloxes. Of the Pelargoniums no fewer than 522 varieties were planted out for observation, and amongst these, in their various sections, the

Floral Committee distributed twenty-nine Certificates. The salmon-coloured and white-flowered varieties of Pelargoniums not being found suitable for open-air culture, but being highly decorative as cool greenhouse plants, the Committee in 1872 desired that a trial of these as pot-plants should be made, and 54 varieties were thus grown, with the result that one was specially certificated, and a selection of the most useful of the remainder approved and recommended for indoor decorative purposes. In the case of Fuchsias 182 varieties were grown, and seventeen of these were certificated as desirable decorative sorts; while of Pentstemons and Phloxes large collections were planted out, and four of the former and seven of the latter were selected for Certificates. The report on these collections will be found in the number of the *Journal* just issued.

The collection of Hardy Herbaceous Perennials has been enriched during the season by the presentation of 300 species and varieties from the Royal Gardens, Kew; and of numerous species of Aster from the Floral Director. Of these latter plants it was hoped that a large collection might be got together, with a view to their examination by the Professor of Botany; and contributions for this purpose will still be gladly received by the Gardener-in-chief.

A very handsome new Fern, which sprang up in one of the propagating houses a year or two since, and which is now a well-developed specimen, has been described and figured during the past year in the *Journal*, under the name of *Pteris serrulato-tremula*. It is very remarkable that this plant, supposed from its compound appearance to be a hybrid between *P. tremula* and *P. serrulata*, though forming spores in abundance, cannot, so far as yet experienced, be increased by this means, the typical *P. tremula* only being produced from them. It is probably, therefore, after all, only a spore-sport of this well-known plant.

Of other matters which have come before them, the Directors think it only right to mention that the Gardener-in-chief has reported most favourably to them of the action of a new Wrought-Iron Boiler erected by Messrs. T. Green & Son, which has done its work most efficiently and economically; and they are informed that a similar boiler is now most satisfactorily heating the Conservatory at Kensington.

Professor Thiselton Dyer's Lectures to the young gardeners at Chiswick, on Elementary matters of Science bearing upon Horticulture, and which were briefly referred to in the Report of 1873, were listened to with attention and advantage by the young

men to whom they were addressed. It is much to be desired that instruction in the higher branches of Horticulture should also be given.

A list of Presentations of Seeds and Plants is appended ; and the Directors, on their part, desire to record their thanks to the several Donors, inasmuch as, through the agency of these donations, the interest of the collections in the Garden has been materially increased.

M. J. BERKELEY.

R. HOGG.

T. MOORE.

XXIX. Report on Plants Grown for Trial at Chiswick, 1874.

By THOMAS MOORE, Floral Director R.H.S.

THE principal subjects set apart for trial during the season which has just passed away, were—Bedding Pelargoniums, the rose-pink section of Pelargoniums (as pot-plants), Bedding Pansies, Hybrid Begonias, and Pentstemons. Of these, the two first-named groups were examined by the Floral Committee on August 29, the plants, owing, to the late season, not being in condition earlier ; and the Pansies were examined on July 15, being then fairly in bloom. The collection of Begonias was not sufficiently filled up, and the Pentstemons passed out of flower too rapidly during the intense hot weather of the latter part of the summer to permit of their being satisfactorily adjudicated upon. Now that a constant supply of water has been laid on, it may be expected that heat and drought will be more effectually combated than formerly.

BEDDING PANSIES.

Of these (including *Violas* of the *cornuta* race) 139 varieties were contributed by Messrs. Dicksons and Co., of Edinburgh ; Mr. R. Dean, of Ealing ; Messrs. Milligan and Kerr, of Dumfries ; Mr. Westland, of Witley Court Gardens ; Mr. Cocker, of Aberdeen ; Mr. W. Kerr, and Mr. Stuart. The plants, which had been for some time in good condition, were inspected on July 15, when eleven varieties were selected for Certificates, and the following conclusions were arrived at respecting the others :—

Blue Bell *** (R. Dean). This proved to be an early-flowering sort, and remarkably free. The flowers are individually

small and of a lilac-blue colour, but the great profusion in which they are produced renders the plant very attractive. The three marks awarded to it (indicated by the asterisks which follow the name, as in the other cases recorded below), are equivalent to a first-class certificate.

Chieftain ** (Dicksons & Co.) The plant was of dwarf habit, and a free-grower and bloomer; the colour of the flowers lilac-purple, with a rich dark eye.

Dicksons' Golden Gem *** (Dicksons & Co.) A very bright yellow, with radiating eye.

Dicksons' King *** (Dicksons & Co.) A bold and free-blooming sort, well-marked and effective; the colour is a lilac-purple or bluish-purple, with rich dark eye.

Dicksons' Queen *** (Dicksons and Co.) Of dwarf habit, and very free-blooming; white, with dark eye.

Imperial Blue Perfection *** (R. Dean). An effective and free-blooming variety, in which the flowers are of a deep lilac-tinted blue.

Lillywhite Tom Thumb *** (R. Dean). A neat-habited sort, and one of the earliest and most constant bloomers; the flowers are white, with an eye of radiating lines.

Miss Mailland *** (Milligan & Kerr). A neat-habited plant, with the flowers white, and furnished with dark radiating lines spreading from the eye.

Mulberry *** (R. Dean). A neat-growing variety, and one of the earliest and freest to bloom; in the way of Cliveden Purple; the colour is a dark mulberry purple, very rich and effective.

The Tory *** (Dicksons & Co.) Of compact habit and a free bloomer; the flowers dark purple, with a rich dark eye.

Tyrian Prince *** (R. Dean). A very free-blooming purple self, likely to be useful for bedding purposes.

The Committee was of opinion that in a general way the value of a Bedding Pansy was in proportion to its earliness, since they are plants not much required during summer. The present collection, owing to the adverse season, was not inspected till the middle of July, which was considered to be too late to arrive at the true merits of the sorts, and it was noted that they should be examined about the first week in May. To this end the several approved varieties will be again grown, with a view to their being examined next spring. Some of the sorts, especially Blue Perfection, revived with the rain which followed on the visit of the Committee, and

were well covered with another crop of flowers. The following sorts were selected as being worth another trial :—

Alpha (Dicksons). Purple, with dark eye.

A. F. Barron (Cocker). Pale blue.

Blue Perfection (R. Dean). Not an early sort, but one which mixes well with *Pelargoniums*.

Blue King (R. Dean). Good habit ; lilac-blue, with black eye.

Blue Gem Tom Thumb (R. Dean). A neat round flower, of a pale blue colour.

Blue Bedder (R. Dean). Free and good, deep blue-lilac, nearly the colour of *Imperial Blue*.

Blue King (Dicksons). Neat habit ; blue-lilac, with dark eye.

Bismarck (Cocker). Dark purple.

Bedfont Yellow (R. Dean). A strong-growing sort, with the flowers bright yellow.

Concord (Cocker). Purple, with dark eye.

Chiswick White (R.H.S.) A large pure white of good habit, the flowers free and sweet.

Delicata (R. Dean). White, with stained upper petals and dark eye.

Dicksons' White Bedder (Dicksons). Yellowish-white, veiny.

Dicksons' Snowflake (Dicksons). A narrow-leaved sort, with small white flowers and a radiating eye.

Duchess of Edinburgh (Cocker). White, yellow, and buff.

Eyebright (Dicksons). Out of condition.

Ella Sheppard (Kerr). White and purple.

Fireman (Cocker). White, yellow, and buff.

Imperial Blue (R. Dean). Deep blue-lilac, with black eye.

In Memoriam (Dicksons). Dark rich purple.

Lothair (R. Dean). Rich violet-purple self.

Lutea Grandiflora (Westland). Yellow ; good.

Major (Cocker). Pale blue-purple.

Magnificent (R. Dean). Dark purple ; a darker shade than blue *Perfection*.

Maggie (R. Dean). Dark mulberry-purple, with white tips.

Miss Annie (Cocker). White, with rich dark eye ; neat.

Monarch (Dicksons). Dark purple, with dark eye.

Nickie (Cocker). Lilac-blue, with dark eye.

Pride of Rufford (R. Dean). Pale yellow, with dark eye ; considered to be too late a bloomer.

Primrose Queen (R. Dean). Pale sulphur yellow.

Profession (R. Dean). Yellow and purple.

Profusa (Cocker). Blue-lilac.

Princess Teck (R. Dean). Light lilac or lavender, with white centre ; free and early.

Purple King (Dicksons). Dark purple.

Queen of Lilacs (Dicksons). Rosy-lilac, compact and erect in habit ; pretty in summer.

Regina (Dicksons). Not in condition.

Sovereign (Dicksons). Early and of good habit ; bright deep yellow, with radiate eye.

Snowflake (R. Dean). White, with radiate eye ; similar to *Lilywhite Tom Thumb*, but rather larger.

Stricta alba (Dicksons). White ; not an early bloomer.

Sunshine (R. Dean). Yellow and purple.

The Shah (Cocker). Mulberry-purple.

The Primrose (Dicksons). Very pale primrose-yellow.

Vanguard (Dicksons). Dark mulberry, almost black.

Westland's Yellow (Westland). Very much resembles *Lutea Grandiflora*.

White Perfection (Dicksons). White, with radiate eye.

Yellow Boy Tom Thumb (R. Dean). Small pale yellow.

BEDDING PELARGONIUMS.

A very large number of the older and inferior varieties were weeded out of the collection last year, so that the quality of those grown on this occasion was higher than usual. Several sorts had the certificates granted on a former occasion confirmed, which was equivalent to a verdict that their good qualities were retained and were again conspicuous. Three marks indicate a first-class certificate, as usual, in these reports.

Pelargoniums were sent for trial by—Mr. Bland, St. Margaret's, Twickenham; H. W. Borrell, Esq., Ockenden House, Cuckfield, Sussex; Mr. S. Davis, The Cemetery, Maidstone; Dr. Denny, Stoke Newington; Mr. F. Dodds, Herringswell House, Mildenhall, Suffolk; Messrs. Downie Laird and Laing, Stanstead Park, Forest Hill; Mr. F. W. Durrent, Knowle Hill, Cobham, Surrey; Mr. George, Putney Heath; Mr. J. Grove, 2, Elizabeth Cottages, Chiswick; Mr. J. Hodgson, 14, Thames Street, Woolwich; Mr. F. Kilpin, East Acton; Mr. James King, Allanbury Park, Binfield; Mr. F. R. Kinghorn, Sheen Road, Richmond, S.W.; Mr. N. Kneller, Malshanger Park, Basingstoke; Mr. Mews, Chiswick House; the Rev. F. Miles, Bingham Rectory, Notts; Mr. C. Orchard, Coombe House, Croydon; Mr. Wm. Paul, Waltham Cross, N.; Mr. J. R. Pearson, Chilwell, Nottingham; Mr. Porter, Sion Lodge, Isleworth; Mr. H. Stapleton, Spring Grove House, Isleworth; Mr. E. P. Tipping, 9, Sheen Dale Villas, Richmond.

Golden Variegated Zonals.

Macbeth }
Oriental } had the certificate confirmed.

Silver-Margined.

Little Trot *** (sent by S. Davis.) A very dwarf and excellent variety, adapted specially for edging, being a small grower and of compact habit. The leaves have a green centre and broad edge of pure white. Flowers deep scarlet.

Albion's Cliffs }
Brilliant Superb } had the certificate confirmed.
Laura

Gold-Leaved.

Creed's Seedling
Crystal Palace Gem } had the certificate confirmed.

Bronze Zonal.

Black Douglas
Marechal McMahon } had the certificate confirmed.

Rose Pink.

Amaranth
Florence Durand
Mrs. Haliburton
Cleopatra } had the certificate confirmed, Cleopatra being also sent in under the name of Miss Davies.

Sir Richard Wallace, which had zoned leaves and was of medium growth, had large bright rose-pink flowers with a white base to the upper petals. This was the brightest of the rose colours.

Scarlet, Rosy-Scarlet, &c.

Ama Pfitzer *** (E. G. Henderson & Son). An orange-scarlet nosegay of vigorous spreading habit; the leaves bold, undulated, and faintly green-zoned. The flowers come in long-stalked, large trusses, and are of the nosegay class, but well-formed, and of a bright orange-scarlet. It is a very fine and attractive variety, the trusses having rather a spreading tendency.

Bonfire *** (E. G. Henderson & Son). A very striking variety of moderately compact habit, with dark-zoned leaves, and very fine flowers on moderately large trusses. The flowers are of the semi-nosegay class, of fine shape, and of a bright rich scarlet, which is most effective in the flower garden.

Claude de la Meurthe *** (E. G. Henderson & Son). A variety of striking colour and of moderately vigorous habit, the leaves wavy and deeply lobed, rather pale green, and faintly zoned. The flowers come in moderate trusses, the colour being a rich carmine-rose with a distinct flush of deep rose, or a bright amaranth rose—one very difficult to designate. The award was made chiefly on account of the effective colour.

Col. Holden *** (Pearson). A fine variety of vigorous but spreading habit, furnished with wavy slightly-zoned leaves. The flowers are in large compact trusses, of a deep carmine-crimson, and very showy and effective.

Prince Arthur *** (Fraser). This belongs to the marbled-leaved, or what is sometimes called the coral-stemmed section represented by *Sheen Rival*. It is of moderately vigorous

growth, rather spreading in habit, with very dark-zoned wavy leaves, which are marbled or mottled in the green parts. The flowers are of a light opaque scarlet in good bold trusses.

Rev. F. F. Fenn *** (Pearson). A most attractive sort of the well-known semi-nosegay Chilwell strain. It is of medium vigour and rather erect growth, in which respect it is superior to many others of this race; the plant, moreover, is compact and well filled out; the leaves are of moderate size, and scarcely zoned. The semi-nosegay flowers are in numerous compact, moderately large trusses standing well up from the leaves; the colour is a crimson-scarlet, very bright and rich.

Richard Dean *** (E. G. Henderson & Son). A free-blooming and very showy variety, of vigorous growth; the leaves dark-zoned with rounded lobes; and the flowers large, in moderate-sized trusses, of a clear bright light scarlet, which is very telling in the mass.

Sparkler *** (E. G. Henderson & Son). A beautiful variety of moderately-vigorous and rather spreading habit, with dark-zoned leaves. The flowers are in dense, compact, moderate-sized trusses, and are of a clear carmine red with a rosy tint—a very distinct and pleasing shade of colour. The flower-stalks are scarcely able to sustain the weight of the densely-formed trusses.

<i>Warrior.</i>	} Certificates confirmed.	{	<i>Indian Yellow.</i>
<i>Corsair.</i>			<i>Orange Bouquet.</i>
<i>Grand Duke.</i>			<i>Lucius.</i>
<i>H. M. Stanley.</i>			<i>Amy Hogg.</i>
<i>Milton.</i>			<i>Lady Kirkland.</i>
<i>Soleil.</i>			

PELARGONIUMS IN POTS.

Last season the whites and salmons were grown in pots in order to test their qualities as greenhouse and conservatory plants. This season the rose-pinks were similarly treated, and Mr. Barron took the opportunity to submit again for examination all the sorts approved last year in the salmon and white series. The results were as follows:—

Elia *** (F. Miles). A very fine variety, of moderately vigorous growth, with rather large indistinctly-zoned leaves, and large trusses of flowers of a very bright rose-pink, the upper petals paler and veined at the base. It is a showy variety, making fine bold trusses of flowers.

Master Christine *** (Veitch). This variety, which is "not to be depended on as a bedder," makes a very fine pot plant. It is of dwarf dense habit, with small crenate green leaves, and bears numerous heads of dense bright rose-pink flowers having the base of the upper petals white. It has very much the habit of *Mrs. Haliburton*, but produces its flowers in denser trusses.

Mrs. Haliburton *** (Kinghorn). A variety of dwarf dense habit, clothed with small crenate downy green leaves; the flowers are produced in very numerous trusses, and are small and of a bright rose colour. This is a very effective variety.

Mrs. Tate *** (Pearson). A variety of moderately vigorous spreading habit, with the green leaves scarcely zonate; the flowers are produced in good-sized close trusses, and are of a rich deep rose-pink with white base to the upper petals. The award was made as a pot plant.

Mrs. Turner *** (Pearson). This novelty is of vigorous and rather spreading habit; the leaves are soft and pale green; the flowers are borne in large trusses, and are nearly the colour of those of *Amaranth*, a pale violet-tinted rose or a purplish-rose, but much larger and finer in quality. It proved to be one of the best of the series for indoor purposes.

Queen of Beauties *** (F. & A. Smith). A dwarf-habited variety, with dark-zoned leaves and finely-shaped flowers in moderate-sized trusses; white, with a large bright salmon eye occupying nearly half the surface of the petals. It is a very handsome and attractive sort.

Vanessa (F. Miles). This variety is too good to be passed over without remark, though by some inexplicable means it failed to obtain an award. It is a beautiful flower, and a decided improvement on the charming *Violet Hill Nosegay*. The plant is of moderately vigorous habit, with medium-sized leaves, having a dark green zone; while the flowers come in bold trusses, and are of a salmon-pink colour shaded with orange-scarlet.

White Swan

Belle Esquemoise

Polly King

President Thiers

Forest Hill Nosegay

} had their certificates confirmed as pot plants.

TROPÆOLUMS.

T. compactum luteum *** (R. Dean). The plants of this variety form close compact tufts of a foot across and six or eight inches

high, covered throughout the season with a profusion of closely-set, attractive-looking flowers, which are of a deep yellow with maroon crimson spots.

T. compactum sulphureum was similar in character, but the straw-yellow spotted flowers were not quite so freely produced. *T. compactum scarlet* was a trifle stronger in growth, but a free-blooming compact orange-scarlet.

XXX. On the Winds at Chiswick and Barnsbury during 1873.

By R. STRACHAN, F.M.S., Meteorological Office.

THE distance apart of these two stations is trifling, but the winds, as observed at them by two different observers, may be compared with the view of showing the reliance that can be placed upon eye observations of wind, and pointing out the value of the method of reduction.

Let it be granted that a single observation daily affords a general estimate of the course of the atmospheric current during each day, then it must be allowed that the resultant of a month's observations must give a tolerably correct idea of the course of the air during that period. So also the resultant of the monthly resultants will approximate to the actual course of the wind during the year.

The resultant direction and force of the wind has been calculated from the wind observations by summing the estimated forces under each direction, according to the method for computing a mechanical resultant on the principle of the composition of forces.

This assumes an equality between the units of the arbitrary scale for force, namely 0 to 12, which is not theoretically correct, though probably the resultants are as reliable as each single estimate of the force of wind by personal impression. The results are as follows:—

Periods.	Chiswick.			Barnsbury.		
	Direction.	Force.		Direction.	Force.	
January ...	S 15° W	1.6	...	S 61° W	2.7	...
February ...	N	1.5	...	N 20 E	1.1	...
March ...	NE	0.6	...	N 51 E	0.5	...
April ...	N 11 E	1.9	...	N 22 E	1.1	...
May... ..	N 35 W	0.9	...	N 71 W	0.9	...
June ...	S 73 W	0.6	...	W	0.6	...
July ...	S 33 W	2.2	...	S 69 W	2.0	...
August ...	SW	3.0	...	S 72 W	1.9	...
September ...	S 60 W	1.4	...	W	1.1	...
October ...	S 40 W	1.1	...	S 82 W	1.1	...
November ...	S 68 W	0.1	...	N 51 W	0.6	...
December ..	S 53 W	1.2	...	S 76 W	1.4	...
Year ...	S 64 W	0.65	...	W	0.86	...

The agreement between these results, considering the tentative character of such observations, may be deemed satisfactory. Probably the means between the two sets would represent a nearer approach to accuracy.

As it is usual to take the mean of the barometrical observations as an expression for the mean statical pressure of the atmosphere during the month or year, so also the resultant of the winds should be taken to represent the mean dynamical force of the atmospheric movement for the same place and period. If this were done generally valuable information as to the relation of these statical and dynamical forces might be derived from comparisons of result at different stations. True, the observations of wind are not so precise as those of the barometer; nevertheless, a compensation of errors might be depended upon from a large number of stations; and, in a general way, we should be able to affirm with considerable accuracy the movements of the atmosphere during the months and seasons, and be able to trace the temperature and vapour which entered and left the country during these periods.

These results for 1873 show at a glance that at London our air came for the most part from the NE during February, March, and April; in May from the NW; in June the winds were evidently very variable; during July and August there was great excess of SW winds; in September and October we had most air from WSW; in November the winds were again very variable, and January and December show that most air came from the SW.

It would be instructive and interesting to study the mean heights of the barometer in relation to these wind resultants, and this can be done by reference to the meteorological tables published in the journal of the Royal Horticultural Society.

XXXI. Report on Broad Beans Grown in the Garden at Chiswick, 1874. By A. F. BARRON, Gardener-in-Chief, and Secretary to the Fruit Committee.

THE collection, composed of about fifty packets (a great portion being duplicates), was sown on March 6th in very deeply-trenched fresh soil, in lines three feet apart. Notwithstanding the dry season, the Beans continued to grow well, and kept free from blights. The trial was in all respects a satisfactory one. The Committee awarded two First-class Certificates, and reduced the number of varieties to twenty. A further trial is necessary to

test their hardiness during winter. For this purpose the seed should be sown in the month of November.

The following is a list of the Donors :—

Messrs. James Carter & Co., Holborn.

Mr. J. Douglas, Loxford Hall.

Messrs. J. Hardy, Bures, Essex.

„ Minier, Nash & Nash.

„ Nutting and Sons.

„ Veitch & Sons.

MM. Vilmorin, Paris.

Messrs. Waite, Burnell & Co.

1. *Long-pod. Early Long-pod.*

Plant of a very free habit of growth ; branching at the ground, with from 3 to 5 stems, about 2 feet 6 inches high. Pods 7 inches long, with 3 to 5 medium-sized beans. Ripe seed, dull fawn colour. Prolific. A general good cropper, and of good quality. Early.

2. *Hangdown Long-pod. Matchless Long-pod. Monarch Long-pod. Fève de Mârais grosse Ordinaire.*

A somewhat larger and more prolific variety of the Long-pod, having the fully-grown pods much inclined downwards. Ripe seed dull fawn.

3. *Carter's Mammoth Long-pod.*

A very superior variety of the Long-pod, with very large long-pods. *First-class Certificate.*

4. *Green Long-pod.*

Differing from the ordinary Long-pod by the colour of the Beans, which are, when fit for use, bright green. Pods from 4 to 5 inches long, mostly erect, containing from 3 to 4 beans. Ripe seed, dull green.

5. *Fève Julienne.*

Plant robust, 2 feet 6 inches high. Pods about 4 inches long, narrow, containing about 3 small beans. Ripe seed, small, dull-grey. Worthless.

6. *Fève Julienne Verte.*

A green-seeded variety of the preceding. Comes into use two days later than Long-pod.

7. *Mazagan. Early Mazagan. Hative de Mazagan.*

Plant vigorous, with 3 to 5 stems, 3 feet 9 inches high. Pods produced abundantly, erect or upright, 4 inches long, with 3 to 4 small beans. Comes into use five days later than Long-pod, and is the latest of all.

8. *Hardy's Pedigree Windsor.*

Plant of robust growth, 2 feet 6 inches high. Pods produced abundantly, generally curved downwards like the Long-pods, from 5 to 6 inches long, with 3 large broad beans. This seems to be an intermediate variety between the Long-pods and Broad Windsor Beans, and will probably be found to be the *Old Toker Bean*. An excellent sort.

9. *Windsor. Broad Windsor. Improved Broad Windsor. Westbury Prize. Taylor's Windsor.*

Plant of full and robust growth, branched. Pods produced abundantly, much curved downwards, 4 to 6 inches long, about $1\frac{1}{2}$ inch broad at the lower end, with 2 to 3 very large broad beans. Ripe seed large, dull fawn colour. This is a much esteemed sort, and of most excellent quality.

10. *Thick Windsor.*

This is distinct from the preceding, in having thicker seed in a ripe state.

11. *Harlington Windsor. Loxford Windsor. Broad Windsor. (Veitch).*

This is a well selected and somewhat improved form of the Broad Windsor, producing rather larger pods.

12. *Green Windsor.*

This is distinguished from the Broad Windsor by having the seeds green. It is on this account greatly preferred by some. Ripe seed large dull green.

13. *Seville Longpod. Fève de Seville (Vilmorin).*

Plant moderately robust, 2 feet high; does not branch so much as other sorts. Pods very long, 7 to 8 inches, rather sparingly produced, with about 6 beans of about the same size as the Longpods; they hang down so much as almost to rest on the ground. Ripe seed, large, dull fawn colour. This is the earliest and longest podded of all the broad beans. Is fit to gather 3 days before the Long-pods, and 8

days before the Mazagan. It is of good quality. *First-class Certificate.*

14. *Fève Violette grosse.*

Plant of robust growth. Pods 6 inches long, with 3 to 4 fair sized beans. Is fit for use three days later than the Long-pod, the young beans being of a pale red colour. Excellent quality. Ripe seed rather long, of a dull violet colour.

14. *White Blossom.*

Plant robust, 2 feet 9 inches high. Blossom white. Pods 4 inches long, with 3 fair-sized beans. Ripe seed small black. The is five days later than the Long-pod. A moderate bearer.

16. *Red Blossom.*

Plant robust, with 3 to 5 stems, 2 feet 6 inches high. Blossom deep dark red, with black lip; extremely ornamental. Pods 4 inches long, with 3 fair sized beans. Ripe seed is spotted dingy brown. Fit to gather same time as Long-pod. It is much subject to sport, the colour of the flowers varying from deep red to pale dingy brown and nearly black. A moderate bearer.

17. *Fève très naine Rouge.*

Plant robust, branching much, about 12 inches high. Blossom of the ordinary character. Pods 4 inches long with 3 small beans. When fit for use tinged red. Comes into use the same time as the Long-pod. The ripe seed small, dingy red. An inferior sort. Moderate cropper.

18. *White Fan. Royal Dwarf Fan.*

Plant robust, much branched, 18 inches high. A most profuse bearer. Pods produced in erect clusters from the surface of the ground, from 3 to 4 inches long, with about 4 fair-sized beans. Ripe seed, small, dingy fawn colour. Fit for use two days after Long-pod. A very excellent variety and good quality.

19. *Beck's Dwarf Green Gem.*

Plant robust, but particularly neat and compact; much branched, 1 foot high. Pods small, produced in erect cluster, abundant, about three inches long, with 3 small beans of a fine green colour. Ripe seed small, green. Fit for use one day after Long-pod. A most desirable variety to cultivate, the crop secured from these dwarf beans being quite equal to that from the tall forms.

20. *Naine Hative.*

A very inferior form of the preceding.

XXXII. Report on Potatoes grown in 1874 at Chiswick. By A. F.

BARRON, Gardener-in-Chief and Secretary to the Fruit Committee.

AFTER the full and comprehensive trial of Potatoes made by the Fruit and Vegetable Committee in 1873 and reported on at p. 74 of the present volume, it was not this season deemed necessary to continue the cultivation of so complete a collection. The trial has, therefore, been confined to sorts which were not cultivated last season, or which were but imperfectly represented. Several of the leading types have been grown for comparison.

The collection, about 153 in number, was planted on the 23rd of March on well-trenched and manured ground. The sets were in most cases put in whole, in lines, three feet apart, and about twenty inches between each set. The plants came up well, and looked promising; but were cut down by frost repeatedly. This induced a great number of stems to perish, and, combined with the exceeding dryness of the summer, tended to make the crop small, although as a rule of excellent quality.

The disease did not make its appearance until the 6th of August, and then the tubers were affected, whilst no trace of it could be found on the haulm. Several varieties have suffered severely, especially some of the American sorts, Lapstones and Red-skinned Flour Ball. In 1873 the Regent class suffered most severely, and the Red-skinned Flour Ball was almost free. This season the result is exactly the reverse.

Many of the stools had a dressing of Amies' Patent Chemical Manures. This certainly tended to increase the crop.

The Committee have examined the potatoes whilst growing four times, and awarded five First-class Certificates. The number of assumed distinct varieties examined amounts to 280, not including some sixty unnamed seedlings. This formidable list has been reduced by the detection of synonyms to 150 varieties, which have been described, and are probably distinct.

The following is the list of Donors who this year furnished tubers for trial:—

Messrs. B. K. Bliss & Sons, New York.
 H. Burslem, Esq., Brewood, Stafford.
 Messrs. James Carter & Co., High Holborn.
 Mr. J. Cattell, Westerham, Kent.
 Mr. G. Cooling, Bath.
 Mr. F. Dancer, Little Sutton, Chiswick.
 Mr. R. Dean, Ealing and Bedfont.
 Mr. R. Farquhar, Fyvie Castle, Aberdeenshire.
 G. F. A. Flower, Esq., Stafford, Dorchester.
 Mr. C. France, Culzean, Maybole, Ayrshire.
 Mr. H. J. Hardy, Bures, Essex.
 Messrs. Hooper & Co., Covent Garden.
 Mr. W. Horley, Toddington, Beds.
 Dr. Masters, 41, Wellington Street.
 Mr. T. McGann, Gortaclare, Burrin, Ireland.
 Messrs. Minier, Nash & Nash, 60, Strand.
 Mr. J. Stone, Wickham Road, Deptford.
 Mr. W. Taylor, Longleat, Warminster.
 Mr. W. Tillery, Welbeck Abbey, Worksop, Notts.
 Messrs. James Veitch & Sons, Chelsea.
 Mr. R. T. Veitch, Exeter, Devon.
 J. White, Esq., Hampton Row, Bath.

In the following list the same arrangement is adopted as in the report of last year. This may be referred to for the descriptions of the kinds which were tried then. It has not been thought necessary to reprint these in the present report except where they were found to need correction.

Series I. SKIN WHITE OR STRAW-COLOURED.

§ 1. Long or Kidney-shaped.

Ashleaf Kidney. (See p. 76).

Synonyms. — Marjolin; Oakleaf; Duckstone; Sandringham Kidney (Minier & Co.); Early White Long Kidney (Veitch); Cooling's Improved Ashleaf (Cooling).

Mona's Pride.

Haulm and general characters of plant same as in Ashleaf Kidney. Tuber short, rather broad and flat. An excellent variety.

Kentish Ashleaf Kidney. (See p. 76).

Synonyms.—Veitch's Improved; Cave's Seedling; Cambridge-shire Kidney; Nutbrown; Alma Kidney; Early May; Benson's Seedling; Shepherd's Kidney; Reynard; Nonsuch; Tory; Conqueror; Mona's Pride; Champion; Early Ranelagh; Laing's First Crop; Stillyan's Kidney. Gillman's Early Pebble (Gillman); Welbeck Seedling (Tillery); Champion (Harrison & Sons.)

This in 1873 was considered distant from Myatt's Ashleaf, on account of the latter being berry-bearing, whilst the Kentish was not so. It has, however, this season produced flowers; so it is doubtful whether any distinctions really exist, further than what may be obtained by change of seed.

Myatt's Ashleaf Kidney. (See p. 76).

Synonyms.—River's Royal Ashleaf; Sandringham Kidney; Myatt's Prolific; Gloucestershire Kidney; Derbyshire Prize Taker; Lee's Hammersmith Kidney.

Bonnemain (Carter).

A very dwarf, slender, haulmed variety of Kentish Ashleaf.

Toddington Kidney (Horley).

A later, more robust, and very productive form of the Kentish Ashleaf.

Advancer (Bell & Thorpe).

Haulm slender, compact, 12 to 15 inches long; stem pale green; leaflets small, pointed, pale green. Flowers very rare. Tuber short, flat, kidney-shaped; eyes full; skin smooth, pale straw-coloured; flesh pale, firm. Moderate cropper. First early. Commended.

Jackson's Improved.

Haulm spreading, 18 inches long; leaves rugose, deep green. Growing later than the Kentish ashleaf.

Cattell's Reliance (Cattell).

Haulm moderately robust, spreading, 2 ft. 6 inches in length; stem pale green; leaflets small, rugose, pale green. Flowers purple, sterile. Tuber medium sized, of the general appearance of the Lapstone; eyes few and small; flesh white, very firm, of good quality. Ripe September 2. Second early.

Cattell's Eclipse (Cattell).

Haulm moderately vigorous, spreading, about 3 feet in length; stem pale green; leaflets rugose, pale green. Flowers light purple, rare. Tuber medium sized, in shape like the Lapstone; skin rough, pale straw; flesh white, firm. Quality excellent. A fine second early. *First-class Certificate*.

Prince of Wales.

Synonym.—The Barber (Dean).

Silverskin Kidney (Dean).

Synonyms.—Sear's Seedling (Horley); Lady Abbess (Sutton).

Haulm robust, spreading; 2 feet in length; stem pale green; leaflets small, rugose, pointed, pale green. Flowers large and handsome, white, abundant, fertile. Tuber medium-sized, long-cylindrical, rather coarse; eyes few, scattered, small, deeply-sunken; skin rough, pale straw; flesh firm, white. A moderate cropper. Second early.

Waterloo Kidney (Dean).

Haulm somewhat resembling Myatt's Ashleaf.

Dawe's Matchless (See p. 80).

Synonyms.—Webb's Imperial; Wormsley; Bryanstone Kidney (Veitch). Manning's Kidney.

Haulm strong, robust, of somewhat spreading growth, about 2 feet 6 inches high.

Excelsior Kidney (Dean).

A more erect-growing and much-improved form of Dawe's Matchless, producing a larger and finer sample. Extra fine quality. *First-class Certificate*, 1873.

Queen of Canada (Stone).

A very large form of Dawe's Matchless.

Lapstone.

Synonyms.—Haigh's Seedling; Cobbler's Lapstone; Almond's Yorkshire Hero; Pebble White; Headley's Nonpareil; Huntingdon Kidney; Yorkshire Hero; Perfection; Rixton Pippin; Ash-top Fluke; Welbeck White, Second Early; Ne Plus Ultra (Farquhar); Early Kidney (Veitch).

Confederate (Veitch).

Haulm robust, spreading, 2 feet in length ; stem tinged purple ; leaflets small, pointed, rugose, brightly green. Flowers abundant, pale lavender. Tuber very large, long, flattened, somewhat kidney-shaped ; surface smooth, even ; eyes few, small, full ; skin a little rough, pale straw ; flesh firm, white. A heavy cropper and very handsome. Second early.

New Englander (Hooper).

Haulm robust, erect, about 2 feet 6 inches in height ; stem pale green ; leaflets large, pale green. Flowers large, white, very abundant. Tuber large, long cylindrical ; eyes numerous, scattered over entire surface, small and deeply sunken ; skin smooth, pale ; flesh firm, white. Moderate cropper. A very coarse looking potato. The leaves decay from off the stem early in a singular manner, the stem remaining erect until it crumbles all away. Second early.

Model (Bell & Thorpe.) (See p. 32.)

Quality excellent.

Shiner (Harrison & Sons).

Haulm of the Regent character of growth, 2 feet 6 inches long ; stem tinged purple ; leaflets dark green, rugose. Flowers bluish white, fertile. Tuber large, broad, flat, of the Fluke character ; eyes, small, full ; skin pale straw-coloured, a little rough ; flesh close, yellow. A great cropper and handsome. General season.

§ Half long.

President (Dean).

Haulm slender, spreading, 2 feet long ; stem tinged with purple ; leaflets small, rugose, pointed. Flowers shaded lilac. Tuber short, flat, very even and regularly formed ; eyes small, few ; skin pale straw-coloured, slightly rough ; flesh firm, white ; very handsome. Moderate cropper. Second early potato. Excellent quality.

Cooling's Early Favourite (Cooling).

Synonym.—Sutton's Early Defiance Kidney (Sutton) ; Flower's Early Wide Awake (Flower) ; The Shiner (Dean).

Haulm robust, spreading, 21 inches long ; stem slightly tinged purple ; leaflets large, of the general appearance of Kentish Ash-leaf. Flowers very large, abundant, of a bluish colour. Tuber

medium sized kidney, hollowed at crown end; eyes situate on crown and on knobby protuberances like the Ashleaf; skin clear straw-coloured, very handsome; flesh close, pale straw-coloured. A very heavy cropper of inferior quality. Second early.

Cattell's Intermediate (Cattell).

Haulm strong, vigorous, 3 feet 3 inches long; stem pale green; leaflets rugose, pale green. Flowers white tinged purple, fertile. Tuber medium, greatling resembling Paterson's Victoria, flattened, broader at one end; skin rough, pale straw-coloured; flesh firm, white. Mid season.

Bresee's Climax. (See p. 84).

Synonyms.—Gravenstein; Coppermine; Climax.

Haulm moderately strong, about 1½ feet long; stem light green, spreading, branching. *First-class Certificate*, 1873.

Snowflake (American) (Carter and Co.; Hooper & Co.; Bliss & Sons).

Haulm moderately robust, compact, ripening early, 2 feet long; stem pale green; leaflets large, broad, pointed, very pale green. Flowers seldom opening. Tuber large, long-ovate, tapering towards the crown; very even and regular; eyes small, almost level with the surface of the tuber; skin pale, straw-coloured, rough; flesh white, of good quality. A very heavy cropper. Early, and one of the most handsome of potatoes.

Bresee's Prolific. (See p. 85.)

Synonyms.—Brown's Prolific Kidney; Sutton's King (Farquhar).

Dwarf White (Bliss & Sons).

Haulm compact, about 12 inches long, ripening off very early; stem pale green; leaflets broad, flat, very pale green. Flowers not opening. Tuber medium size, half-round, flat; surface uneven; eyes large, deeply sunken near crown end; skin smooth, very clear, pale straw-coloured; flesh firm, white, of excellent quality for early use. Moderate cropper. One of the very earliest of Potatoes. *First Class Certificate*, 1874.

Dourie Hall Favourite (Montagu). (See p. 86.)

Haulm robust of Regent type, about 3 feet in length; stem pale green; leaflets large, broad, pale green. Flowers bluish-white, sterile. Tubers large, half-round, sometimes long; eyes few; skin

a little rough, pale straw-coloured; flesh white, firm. Good cropper. Mid season. Very distinct.

Paterson's Victoria. (See p. 86.)

Cattell's Late Nonpareil (Cattell).

This resembles Paterson's Victoria.

§ 3. Round.

Regents. (See p. 86).

Synonyms.—York Regent; Mitchell's Prolific; Early Oxford; Pink-eyed Regent; Rintoul's White Don; Scotch Don; Rusty Coat; Rough Jacket; Early Chinese (Veitch); Early White Round Erfurt (Veitch); Early Don; Gryffe Castle (Harrison).

The above are varieties of the true Regent potato, varying somewhat in point of earliness, and in cropping qualities. This, it is believed, is more due to change of soil than any permanent distinction. This is perhaps the best and most generally useful potato in cultivation.

Dalmahoy. (See p. 87.)

Synonym.—Goldfinder.

Walker's Early. (See p. 87.)

Rector of Woodstock (Fenn.) (See p. 88).

First-Class Certificate, 1872.

Fenn's Early Market. (See p. 88.)

First-class Certificate, 1873.

Henderson's Prolific (Farquhar).

Haulm spreading, moderately robust, 2 feet 6 inches long; stem pale green; leaflets pale green, rugose, resembling those of a Regent. Flowers pale lavender, fertile. Tuber below medium size, round; form even, regular; eyes full; skin clear, slightly rough; flesh pale straw-coloured. A good useful early potato. Great cropper.

Tullinamoult (Farquhar).

Haulm moderately robust, 21 inches long; stem tinged purple; leaflets small, crumpled, withering early. Flowers abundant, purplish white fertile. Tuber below medium size, round, flattened at crown end; eyes rather deeply sunken; skin smooth, pale; flesh pale-straw coloured, firm. Moderately prolific. Second early.

Early Dimmisk (Farquhar).

Haulm gross, spreading, 2 feet 6 inches long; stem pale green; leaflets large, broad, pale green. Flowers do not open. Tubers very large, about 5 or 6 produced at each root, of form somewhat irregular, rounded, hollowed at stalk; eyes small, full; skin rather rough, pale; flesh white, firm, of excellent quality. Second early. *First-class Certificate*, 1874.

Irish White (McGann).

Haulm like that of strong Regent. Flowers not opening. Tube medium round; eyes small, very deeply set, giving the tubers a nobbly appearance; skin pale, smooth; flesh white, firm. A fair cropper. Late second early. A hardy vigorous potato.

White Peach-blossom. (See p. 96.)

Synonym.—Peach Blow (Carter).

Lockloy's Perfection (Burslem).

Haulm robust, spreading, 3 feet long; stem pale green; leaflets rugose. Flowers not opening. Tuber large, rounded, much flattened; eyes chiefly situate at the crown, deeply sunken; skin rather rough, pale; flesh white, firm. A fair cropper. Mid season. A coarse looking potato.

Prize of Holland (Veitch).

Haulm moderately robust, 27 inches long; stem pale green leaflets small, rugose, green. Flowers lavender and white. Tuber small, round; eyes small; skin nearly smooth, pale straw-coloured; flesh yellow-coloured, small, and very inferior. Second early.

Series II. SKIN RED.

§ 1. Long or Kidney-shaped.

American Late Rose. (See p. 90).

Synonym.—American Pale Rose.

First-class Certificate, 1873.

American Early Rose. (See p. 90).

Extra Early Vermont (Bliss & Sons). (See p. 90).

First-class Certificate, 1873.

Rice's Seedling (Farquhar).

Haulm very robust and gross, $2\frac{1}{2}$ feet long; stem green; leaflets bright green, pointed. Tuber large, long, rounded, producing very numerous small ones, very uneven; eyes small, deep, scattered; skin rough, faintly shaded pink; flesh white, coarse. A very coarse sort.

Bountiful (Fenn).

First-class Certificate, 1874.

Early Red Kidney (Dean).

Haulm slender, spreading 18 inches long; stem pale green; leaflets small, pale green, ripening early. Tuber long, slender, of a true kidney shape; eyes few, small, full; skin smooth, pale red; flesh close, yellow. An early sort. Great cropper, and worthless.

§ 2. Round.

Red Emperor.

Synonym.—Carter's Main Crop.

Vermont Beauty (Bliss & Sons).

Synonym.—Brownell's Beauty.

First-class Certificate, 1873.

Welbeck Red (Tillery)

Haulm very robust, 4 to 5 feet long; stem tinged red; leaflets rather small, pointed, rugose, light green. Flowers purplish white, fertile. Tuber medium; form even, round; eyes small, deeply-placed; skin rough, pale red; flesh white, coarse-grained, good for late use. A great cropper. Was raised from Scarlet Prolific. Late.

Rufus (Harrison).

Haulm very robust and gross, 3 feet 6 inches long; stem tinged red; leaflets large, pale green; grows very late. Flowers white, abundant, fertile. Tuber medium sized; form regular, rounded; eyes small, full; skin very rough, deep red; flesh close, yellow. A handsome potato, and a great cropper, but too coarse. Late.

Series III. SKIN PURPLE OR BLUE.

§ 1. Long or Kidney-Shaped.

Precoce de Remy (Veitch).

Haulm straggling, slender, 2 feet 6 inches long; stem reddish; leaflets small, rugose, deep green. Flowers not opening. Tuber small, true kidney-shaped; form very even; eyes small, skin dull, purplish red; flesh close, yellow. A poor cropper and very worthless. Second early.

True Blue (Dean).

Haulm slender, spreading, 18 inches long; stem reddish; leaflets small, rugose, deep green. Flowers white, fertile. Tuber long, narrow, kidney-shaped; form even; eyes small, level with surface; skin rather rough; deep purple; flesh white, firm. Handsome. A moderate cropper. Second early.

Purple Ashleaf (Farquhar).

Synonym.—Stafford Hall. (Farquhar).

Haulm moderately strong, resembling Kentish Ashleaf, spreading, 18 inches long; stem tinged purple; leaflets small, rugose, pale green. Flowers not opening. Tuber above medium-size, long, flat; form very even; kidney-shaped; eyes very small, full; skin smooth, reddish purple; flesh pale, with a dark streak through, close. A handsome-looking potato and a fair cropper. Second-rate quality. Early.

§ 2 Round.

Compton Surprise (Bliss & Sons).

Haulm very robust and gross, 18 inches long; ripens off early; stem green, tinged with red; leaflets very large, broad pale green. Flowers white, sterile. Tubers large, long, flattened, coarse in appearance; eyes numerous, very deep, scattered over entire surface; skin smooth, dark purple; flesh white, firm. A moderate cropper. Mid season.

Scotch Blue.

Synonyms.—Duncan's Seedling; Summer Hill Seedling; Birmingham Blue (Dean).

Haulm moderately robust, spreading, 18 inches long; stem reddish; leaflets broad, green. Flowers not opening. Tuber medium

sized, round; form even; eyes small, few, sunken at crown which is depressed; skin smooth, reddish purple, deep purple in the eyes; flesh white, firm. Moderate cropper. Greatly resembling Scotch Blue.

Surprise (J. White).

Haulm very strong, 2 feet 9 inches long; stem reddish; leaflets small, rugose, deep green. Flowers purple, fertile. Tuber medium, round, flattened, depressed at crown; form pretty even and regular; eyes small, sunken; skin smooth, deep reddish purple, deep violet round the eyes; flesh white, firm. A good productive sort, and handsome. Late.

Skerry Blue (Sutton).

Haulm very robust and vigorous, 4 feet long; stem reddish; leaflets small, rugose, green, with red veining. Flowers dark purple, very abundant, fertile. Tuber large, round, of coarse uneven appearance; eyes large, deeply set; skin rough, dark purple; flesh close, yellow. A great cropper, and a hardy potato, but very coarse. Late.

Series IV.—SKIN STREAKED OR FLAKED.

Barron's Perfection (Farquhar).

Haulm moderately robust, erect, 2 feet long; stem green; leaflets small, rugose, pale green. Flowers purple, very abundant, fertile. Tuber medium, long kidney-shaped, blunt at crown; eyes small, few, mostly situate at crown; skin smooth, occasionally rough, pale straw-coloured, generally flaked with brilliant crimson near the crown; flesh white, close, of good quality. Very pretty. Moderate cropper. Second early. *First-class Certificate*, 1874.

Cattell's Advancer (Cattell).

Haulm robust, almost erect, 3 feet long; stem pale green, tinged purple; leaflets broad, rugose, deep green. Flowers darkly purple, fertile. Tuber medium, half long, flat; eyes small, deeply set; skin pale, straw-coloured, oblong, with a dash of purple near the crown; flesh white, firm. A moderate cropper. Late.

Red Breadfruit. (See p. 98.)

Synonym.—Old Scarlet Keeper (Taylor).

Fit for use late in spring.

Blanchard (Vilmoine).*Synonym*.—Fillpeck (Peake).*Favourite* (Fenn).

This very closely resembles Blanchard. Is smaller and inferior.

Rintoul's Striped Don. (See p. 99.)*Welbeck purple* (Tillery).

A late and strong-growing form of Rintoul's Striped Don, raised by Mr. Tillery Welbeck; from Pink-eyed Regent.

Fortyfold. (See p. 99.)*Synonym*.—Blue Six Weeks (Veitch).

From Mr. C. France, Culzean, Maybole, Ayr, came 40 unnamed seedlings (about 12 varieties), having haulm of much the same character of growth as the Regent class, and clear smooth-skinned round flattened tubers of good appearance and quality, but rather too small. The Committee did not consider any of them improvements on existing varieties, or sufficiently distinct to be introduced.

XXXIII. On the Hybridisation of the Black Monukka and Black Hamburgh Grapes. By A. F. BARRON, Gardener-in-Chief.

The Black Monukka is a Grape believed to be of Indian origin, which was received from the late Mr. Johnson, gardener at Hampton Court, and distributed by the Royal Horticultural Society. It is a grape of great peculiarity and of great excellence. It is of exceedingly robust growth, and a somewhat shy bearer. The bunches produced are, however, very large—from 12 to 20 inches or more in length, and of a regular tapering form. The berries are small, long-ovate, inclining to be conical like an acorn, measuring $\frac{7}{8}$ inch in length and $\frac{5}{8}$ inch in diameter. In colour it approaches black when well ripened, but is more frequently of a dull-reddish brown; it has a thin coating of bloom. The skin is thin, adhering to the pulp, which is firm, fleshy, and not melting, yet very tender and full of juice. It contains no perfect seeds, only one—or at most two—half-formed, and these being soft like the pulp are eaten with it, as

well as the skins. The flavour is rich and sweet, of the most agreeable character, not in any way peculiar, yet refreshing and pleasant to the palate.

The Black Monukka is termed a seedless grape. It is so, however, only so far as the seeds remain immature. The seeds are formed, yet from some cause they are not perfected. This failing may perhaps in some measure account for the smallness of the berry. The peculiarity may possibly be due to defective setting. Were the seeds perfected and fully-grown, as in other grapes, the berries would perhaps be larger. Whether this is so or not, however, to alter its peculiar character in this respect would certainly not improve it. There is something very novel and quite pleasing in eating grapes without being troubled with either skins or seeds.

With the view of being able to introduce some of the desirable qualities of the Black Monukka into our most approved sorts, or of raising a good large-berried grape of a seedless character, such as a seedless Black Hamburgh, it was proposed to try the effect of hybridization.

The necessary and proper precautions being taken to ensure success, a few flowers each of the Black Hamburgh, Muscat of Alexandria and Royal Muscadine were fertilised successfully with pollen from the Black Monukka. Unfortunately, in thinning the grapes the few fertilised berries of the two latter were cut off and so lost. But from the Black Hamburgh some 25 seeds were secured. The reverse of all these crosses was tried also, viz., using the Black Monukka as the female, but without success. Several half-formed seeds were secured from the Black Monukka, more fully-developed than in their usual normal condition, but they refused to vegetate.

From the 25 seeds of the cross between the Black Monukka as the male and the Black Hamburgh as the female, 22 plants have been raised, 15 of which have fruited.

The first noticeable fact is the foliage. The leaves and shoots of the whole set more closely resemble that of the male parent than the female. The leaves are all deeply lobed and sharply serrated, like the Black Monukka, the leaf-stalks red and hairy, as well as the young shoots. The plants bear no resemblance whatever to the Black Hamburgh; by the foliage they would be grouped as four distinct varieties.

In the fruit they are widely different of the 15 which have fruited; eight of them have the berries white, and five have the berries black; six have long or ovate berries, and seven have the

berries round, part of each being black¹ and part white. Three are very early, and two are very late, and with one exception they are all small. Two of them have small berries, resembling the Black Hamburgh (female parent), with the leaves of the Black Monukka; one resembles the Black Monukka in the shape and appearance of the berries, but it is a coarse, late grape. Two of them have proved seedless, like the Black Monukka; but the berries are round, and the one white, the other black. In no case is there an exact reproduction of either the male or the female parent, the majority of the results being decidedly inferior to either. A few have peculiarities which entitle them to further trial, but the greater part are quite useless.

XXXIV. Meteorological Observations taken at the Royal Horticultural Society's Gardens, Chiswick. Reduced by R. STRACHAN, Meteorological Office.

The readings of the barometer and thermometers are all corrected for instrumental errors (which have been ascertained at the Kew Observatory), and those of the barometer are reduced to the temperature of 32° Fah., and to mean sea-level.

The rain gauge is 25 feet above sea-level.

The temperature of evaporation is regularly observed, but is not given here. It has been considered preferable to give the dew-point, which has been calculated from this observation by means of Glaisher's factors.

The figures denoting the estimated force of the wind signify as follows:—1, light air; 2, light breeze; gentle breeze; 4, moderate breeze; 5, fresh breeze; 6, strong breeze; 7, moderate gale; 8, fresh gale; 9, strong gale; 10, whole gale; 11, storm; 12, hurricane.

The notations of weather are, for brevity, expressed by letters, which signify as follows:—b, blue sky; c, detached clouds; o, overcast; f, fog; m, mist; r, rain; h, hail; s, snow; d, drizzle; p, passing showers; q, squalls; t, thunder; l, lightning. A letter repeated denotes intensity.

AUGUST, 1873.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at				
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in Shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	9 a.m.	3 p.m.	9 p.m.
1	In. 30.089	66.0	57.4	78.5	53.0	140.0	48.5	W	5	In.	b c	c	b
2	30.204	63.0	54.0	71.5	48.0	141.0	41.5	WSW	3	0.39	b c	b c	b c
3	30.164	67.0	56.6	72.5	49.0	144.5	43.0	WSW	3	...	b c	o	b
4	30.090	64.0	57.0	74.0	54.0	133.0	49.0	SSW	3	...	o	o	o
5	29.970	66.0	59.2	73.5	60.0	141.0	57.5	SW	3	0.31	o	o p	b c
6	29.947	66.0	56.2	76.5	60.5	139.0	58.5	WSW	6	...	b c	b c	b c
7	30.154	67.0	60.4	77.5	58.5	145.0	55.5	WSW	5	...	b c	b c	b
8	30.030	73.0	63.0	82.5	52.0	150.5	49.0	S	2	...	b	o	c
9	29.915	62.0	48.0	86.5	56.5	156.0	54.0	WNW	6	...	b c	b	b
10	30.103	59.0	50.0	69.0	46.0	141.0	39.0	NW	5	0.40	o	c	o r
11	29.940	52.5	51.5	69.0	52.5	138.0	53.0	ENE	1	0.02	o r	o	b c
12	30.100	64.0	59.0	73.5	52.0	101.5	46.0	SSW	3	0.03	o	o	c
13	29.899	69.0	56.4	76.0	61.0	141.0	60.0	W	6	...	c	c	o
14	30.104	65.0	54.0	74.0	55.5	133.5	52.5	W	3	0.08	b c	o	b c
15	30.090	63.0	61.5	75.0	58.5	92.0	57.5	S	3	0.02	o d	o	o
16	30.011	67.0	60.5	77.5	56.5	134.5	53.0	S	2	...	b c	b c	b
17	30.220	60.0	48.2	84.5	45.0	147.0	42.0	SW	4	...	b c	c	o
18	29.853	61.0	44.2	72.0	62.5	149.5	48.0	S	3	0.28	o d	o d	o r
19	29.609	59.0	55.0	70.0	49.5	122.5	46.5	W	5	0.04	o	c	b
20	29.822	60.0	51.4	68.5	46.5	120.0	40.0	SW	3	0.02	c	o	o
21	29.837	61.0	42.4	68.0	51.5	124.5	45.5	SW	6	...	o	o	b
22	29.908	65.0	55.4	72.0	48.5	139.0	42.5	S	4	0.06	o d	b c	b
23	29.927	61.0	56.7	72.0	46.5	140.0	42.5	SSE	4	...	o f	b c	b c
24	29.872	66.0	60.5	74.5	51.5	131.5	47.0	SE	4	0.69	o m	b c	o r
25	29.918	65.0	60.8	74.5	58.5	129.0	54.0	S	4	0.01	b c	b	b
26	29.916	65.0	55.4	77.5	52.0	137.0	48.0	S	5	0.04	b c	b c	c
27	29.944	66.0	55.5	73.0	55.0	138.5	50.5	SSW	6	0.12	o	o r	o
28	29.609	62.0	43.5	72.0	57.5	138.5	54.5	SSW	6	0.08	o p	o	o
29	29.726	55.5	45.8	66.5	47.5	113.0	43.0	SSW	6	0.05	o	o q	o r
30	29.774	59.0	50.0	62.5	48.5	121.5	42.5	SSW	6	0.09	b c	c b	o r
31	29.860	62.0	58.7	70.5	52.5	122.5	46.5	SSW	2	0.01	o d	o	o
Means	29.954	63.3	54.5	73.7	53.1	133.7	48.7	SW	3.0	2.74	—	—	—

The meteorological elements exhibit a close accordance with their normal values for this month.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	
1	In. 29.796	64.0	59.3	69.5	61.5	95.5	56.5	In.	S	6	b c
2	29.796	59.0	50.6	69.0	53.5	95.0	47.5	0.23	WSW	5	o d
3	29.998	57.5	50.0	66.0	45.0	121.0	38.5	0.01	WSW	2	b c
4	30.081	55.0	51.0	64.0	43.5	119.5	36.5	0.04	WSW	5	o m
5	30.108	55.0	49.2	67.5	40.0	139.0	38.5	...	N	4	o
6	30.003	52.5	43.8	61.0	44.0	105.0	39.5	0.38	NNE	5	o
7	29.820	52.0	46.0	60.0	44.0	119.0	39.5	...	SSW	3	o
8	29.791	53.5	45.5	62.5	44.0	98.5	37.5	...	N	5	b c
9	29.828	60.5	51.2	62.0	43.0	128.0	37.0	...	SW	6	b c
10	29.700	58.0	50.2	63.0	52.5	100.0	48.0	0.24	WSW	6	o
11	29.772	58.5	52.3	65.5	53.0	110.0	51.5	...	WNW	6	c b
12	29.921	56.0	50.2	65.0	46.0	129.0	39.0	...	SW	3	b c
13	29.882	51.0	50.0	65.5	39.0	118.0	32.5	0.14	E	3	o
14	29.637	57.0	53.2	62.0	44.5	99.0	?	0.96	S	3	b c p
15	29.300	51.0	49.8	64.5	47.5	114.5	?	0.06	SSW	6	c b
16	29.700	54.0	44.0	60.5	45.5	112.0	42.0	...	W	6	b c
17	29.744	58.0	55.3	61.5	45.5	112.5	39.5	0.01	SW	5	b c
18	29.932	56.0	44.7	69.0	45.5	104.0	42.0	...	WSW	6	b c
19	30.162	54.0	47.0	63.5	47.0	112.0	43.0	...	WSW	3	o
20	30.119	63.0	55.3	63.5	54.0	114.5	52.0	...	SW	4	b c
21	30.296	62.5	47.7	69.5	54.0	109.5	51.0	...	N	3	o
22	30.544	53.5	42.5	64.5	36.5	109.0	31.0	...	ENE	3	b c
23	30.458	49.0	46.0	61.0	37.5	102.0	34.0	...	SE	1	b c m
24	30.376	48.5	46.4	65.5	35.5	113.5	31.0	...	SE	2	b c
25	30.279	59.0	50.6	63.5	52.0	94.0	48.0	...	E	1	o
26	30.208	50.0	49.8	70.0	40.5	115.0	35.5	...	SW	1	b c
27	30.038	47.5	47.3	72.0	37.0	118.0	33.0	...	SSE	1	b c
28	29.995	43.0	42.0	73.0	39.5	119.0	35.5	...	NE	1	o
29	30.221	51.0	44.0	68.5	39.0	112.5	33.0	...	NE	4	c b
30	30.118	53.0	48.4	60.5	41.0	83.0	35.0	...	SE	2	c b
Means	29.981	54.8	48.8	65.1	45.0	110.7	40.1	2.31	S60°W	1.4	—

REMARKS.—There is again a close accordance between the averages for this month and the normal values of the meteorological elements, except that temperature was slightly in defect.

OCTOBER, 1873.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at			
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	9 a.m.	3 p.m.
1	In. 29.968	57.7	56.9	64.4	46.2	96.0	42.0	In.	SE	1	o f	b
2	30.057	53.0	53.0	69.4	51.4	98.0	50.0	0.01	SSW	1	o f	b c
3	29.943	61.4	60.3	73.1	51.2	116.0	46.5	...	SE	1	o	b c
4	29.928	59.7	56.1	74.6	54.4	114.0	49.2	...	W	2	o	o d
5	30.123	51.3	48.9	61.6	49.9	72.5	49.0	...	N	3	o d	b
6	30.100	46.4	46.4	60.9	37.2	85.0	33.0	...	NW	1	c f	b c
7	29.707	59.0	53.2	64.6	52.2	103.7	48.2	0.42	S	4	c	b
8	29.770	43.5	43.5	62.1	34.9	77.5	39.0	0.03	SSE	2	c f r	b
9	29.930	35.7	29.0	49.4	29.2	80.7	25.0	0.04	NNW	1	r f	o
10	29.750	60.7	55.7	61.4	50.2	100.5	47.0	...	SSW	6	o	o
11	29.833	60.4	54.0	65.9	57.2	84.0	55.5	0.38	SW	7	o	o
12	29.803	49.5	48.7	64.1	49.2	89.5	48.7	1.19	ENE	3	r f o	o r
13	29.616	48.4	46.4	57.9	46.7	61.5	46.0	0.01	WNW	2	c	b
14	29.915	45.6	41.5	53.9	35.2	91.5	31.0	...	W	3	b	b m
15	30.006	40.5	38.7	54.6	29.9	97.5	27.0	0.01	SW	1	b m	b c
16	30.082	40.5	41.0	58.4	34.2	99.0	30.7	...	S	1	o f	b c
17	30.166	45.1	44.1	60.4	33.9	101.0	30.5	...	S	1	m c	b c
18	30.041	53.8	49.0	62.0	39.2	98.5	34.5	...	SW	3	c	o
19	30.224	49.8	45.8	60.0	46.7	101.5	44.5	0.10	NNE	3	r o	o
20	29.834	50.3	47.3	53.4	47.2	65.0	44.2	0.03	WSW	5	r o	b
21	29.932	44.4	37.3	55.4	34.9	100.5	31.0	0.23	SW	6	b c	b c
22	29.272	57.0	48.5	57.4	47.7	83.5	45.7	0.21	SW	7	o	b c
23	29.006	49.1	46.1	58.4	44.4	81.5	43.0	0.22	S	3	o d	b
24	29.286	33.0	27.5	50.4	29.9	72.0	26.7	0.09	SSE	1	o f	f o
25	29.588	31.0	31.0	46.4	31.7	50.5	30.0	0.02	ENE	1	o f	o
26	29.865	43.1	38.4	47.0	38.2	72.0	35.5	...	NNE	3	c	b
27	30.348	42.0	35.8	52.6	32.7	91.5	28.0	...	NE	4	b	b
28	30.546	28.7	28.7	50.1	23.9	93.5	20.0	...	NE	1	b c m	c m
29	30.326	29.0	29.0	50.9	25.4	78.2	23.7	...	SSW	1	f o	o f
30	30.026	27.7	27.7	37.3	25.7	46.2	25.5	0.06	SSW	2	c f	b
31	29.674	40.7	38.4	47.6	24.2	73.7	22.7	0.14	S	2	o	o r
Means	29.891	46.4	43.5	57.6	39.8	86.3	36.9	3.10	S 40 W	1.1	—	—

The pressure was at its normal value, and so was the temperature, with however a tendency to greater cold at night. The direction of the winds was more southerly than usual in this month, and the rain about half an inch in excess.

NOVEMBER, 1873.

METEOROLOGICAL OBSERVATIONS AT CHISWICK.

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Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	9 a.m. 3 p.m. 9 p.m.
1	In.							In.			
2	29.185	48.1	45.2	55.6	45.2	95.0	48.0	0.10	WNW	3	o r b c o r
3	29.339	45.0	39.6	52.4	34.1	94.0	31.0	0.48	SSE	4	o b b b o
4	29.451	38.5	38.5	54.4	31.1	94.0	29.5	0.02	SSE	2	b c b c b
5	29.594	34.5	29.1	55.0	28.3	94.7	28.0	0.09	Calm	0	o b b c b
6	29.459	34.5	47.8	52.4	43.4	66.5	41.0	0.35	S	2	o d o r b c
7	29.225	50.4	46.4	53.1	42.7	60.0	40.2	0.15	S	2	o r o d b c
8	29.579	43.2	42.1	50.9	34.1	52.5	32.0	0.03	SSW	2	o b c m o
9	30.057	47.1	39.5	50.9	45.2	57.0	38.0	0.17	NE	2	o f c c o
10	30.137	47.4	40.2	48.1	40.7	50.7	40.0	...	SE	3	o o o o
11	30.288	43.0	38.0	49.4	41.9	51.2	40.2	...	SE	2	o f c b c
12	30.113	34.2	30.9	47.0	30.6	68.2	28.2	...	NNE	2	o f b b b
13	29.912	30.0	30.0	46.2	24.8	65.7	23.0	0.02	Calm	0	o f o f b
14	29.982	39.7	37.0	42.5	33.1	45.7	30.0	...	NE	2	o b c m o
15	30.338	42.0	34.2	48.6	40.9	71.5	39.7	...	NNE	5	b c b c o
16	30.480	41.7	36.1	46.6	34.1	72.0	31.0	...	NNE	2	o o o o
17	30.497	42.5	40.3	45.4	40.4	49.2	40.0	...	NNE	2	o o o o
18	30.388	43.2	39.5	46.1	40.9	52.0	40.2	...	NNE	2	o o o o
19	30.242	44.0	41.8	45.4	40.4	48.7	37.7	...	ENE	1	o o o o
20	30.167	42.2	35.5	47.6	36.4	52.2	34.0	...	ENE	1	o c o o
21	30.043	35.7	34.5	47.6	33.8	78.2	30.2	0.20	WSW	2	o o o r
22	29.404	53.8	44.5	54.4	43.2	71.5	42.0	...	WNW	4	b c c c b
23	29.611	57.4	46.2	58.6	46.4	73.5	44.7	...	WNW	6	c c c o
24	29.925	45.4	41.6	58.4	40.2	96.5	36.5	...	SW	3	b c o b b
25	30.200	35.0	34.2	51.4	38.4	61.0	32.5	0.01	Calm	0	o f c o d
26	29.908	51.0	49.8	53.1	47.4	68.7	46.0	0.24	SSE	3	o d o o p
27	29.469	45.1	39.5	55.4	44.2	56.2	41.7	...	SW	5	b c c c c
28	29.982	42.7	37.9	51.6	40.2	86.2	38.0	...	SSW	1	o c o b c
29	29.883	53.3	49.5	53.9	49.4	61.0	47.0	0.01	SW	3	o d b c
30	29.913	45.6	37.1	55.6	42.9	66.0	40.2	...	WNW	3	b c b b
Means	29.890	43.8	39.6	51.0	39.0	66.7	36.9	1.93	S 68 W	0.1	— — —

Pressure was slightly below the average, the temperature and rainfall a little above; the winds were unusually variable.

DECEMBER, 1873.

Date.	Barometer at 9 a.m.	TEMPERATURE.				WIND.		RAINFALL.	WEATHER at		
		Air at 9 a.m.	Dew-point at 9 a.m.	Max. in shade.	Min. in shade.	Max. in sun.	Min. on grass.		Direction.	Force.	In.
1	In.	32.5	29.0	49.1	28.3	75.5	26.0	...	WNW	1	In.
2	30.535	48.6	46.1	50.4	43.9	60.2	40.5	0.01	SW	2	...
3	30.547	47.1	45.6	53.9	45.9	68.7	45.0	...	SSW	1	...
4	30.613	41.0	38.1	49.6	40.2	55.0	40.0	...	SW	2	...
5	30.650	42.0	39.1	43.0	39.9	44.0	39.7	...	NNE	3	...
6	30.468	44.0	36.8	45.4	41.9	48.7	39.7	...	WSW	2	...
7	30.430	40.0	38.9	45.1	33.2	47.2	30.7	...	S	1	...
8	30.569	43.0	38.0	47.0	41.2	48.2	40.2	...	Calm	2	...
9	30.622	24.5	22.5	50.6	22.8	64.0	21.5	...	Calm	0	...
10	30.593	20.7	20.7	38.5	20.3	54.0	21.2	...	Calm	0	...
11	30.658	24.5	22.5	26.2	19.8	37.2	18.0	...	SSE	0	...
12	30.652	31.5	30.4	31.7	23.3	37.5	21.0	...	NE	1	...
13	30.653	33.5	32.6	34.0	29.1	33.0	27.7	...	SW	2	...
14	30.524	33.5	33.5	36.0	32.6	38.5	32.0	0.02	Calm	0	...
15	30.261	38.5	35.5	38.2	31.8	39.2	31.5	0.04	SSW	2	...
16	29.867	55.3	49.6	56.0	43.9	54.2	43.0	...	W	6	...
17	30.187	50.5	48.2	56.9	45.4	58.2	42.0	...	WSW	3	...
18	30.213	48.3	44.7	56.9	45.4	83.0	42.0	...	SSW	3	...
19	30.072	49.3	45.4	54.1	47.2	84.0	41.0	0.07	NNW	1	...
20	29.968	38.2	37.7	50.4	34.2	57.2	31.7	...	SW	3	...
21	30.157	45.1	42.1	48.6	40.7	81.0	38.2	...	WSW	4	...
22	30.049	47.4	41.5	52.4	45.7	64.7	43.5	0.05	SE	3	...
23	30.193	40.5	36.5	51.1	35.4	79.2	29.0	...	SSW	2	...
24	30.210	50.0	42.2	52.1	45.4	68.2	44.7	...	SSE	0	...
25	30.360	38.0	37.3	50.6	32.2	61.0	30.0	...	NNW	2	...
26	30.144	43.7	38.9	46.1	42.2	45.0	41.0	0.12	WSW	2	...
27	29.812	39.0	38.3	47.1	38.4	47.2	38.7	0.15	Calm	0	...
28	30.226	31.0	29.9	42.0	25.1	64.2	22.7	0.01	SE	2	...
29	30.108	28.2	27.2	31.7	25.3	34.2	25.2	...	SW	4	...
30	29.922	32.5	30.0	40.0	28.8	71.5	25.5	0.08	SW	2	...
31	29.580	47.0	44.4	49.1	39.4	75.0	37.2	...	SW	4	...
Means	30.305	39.6	36.9	46.0	35.4	57.0	33.6	0.55	S 53 W	1.2	0.55

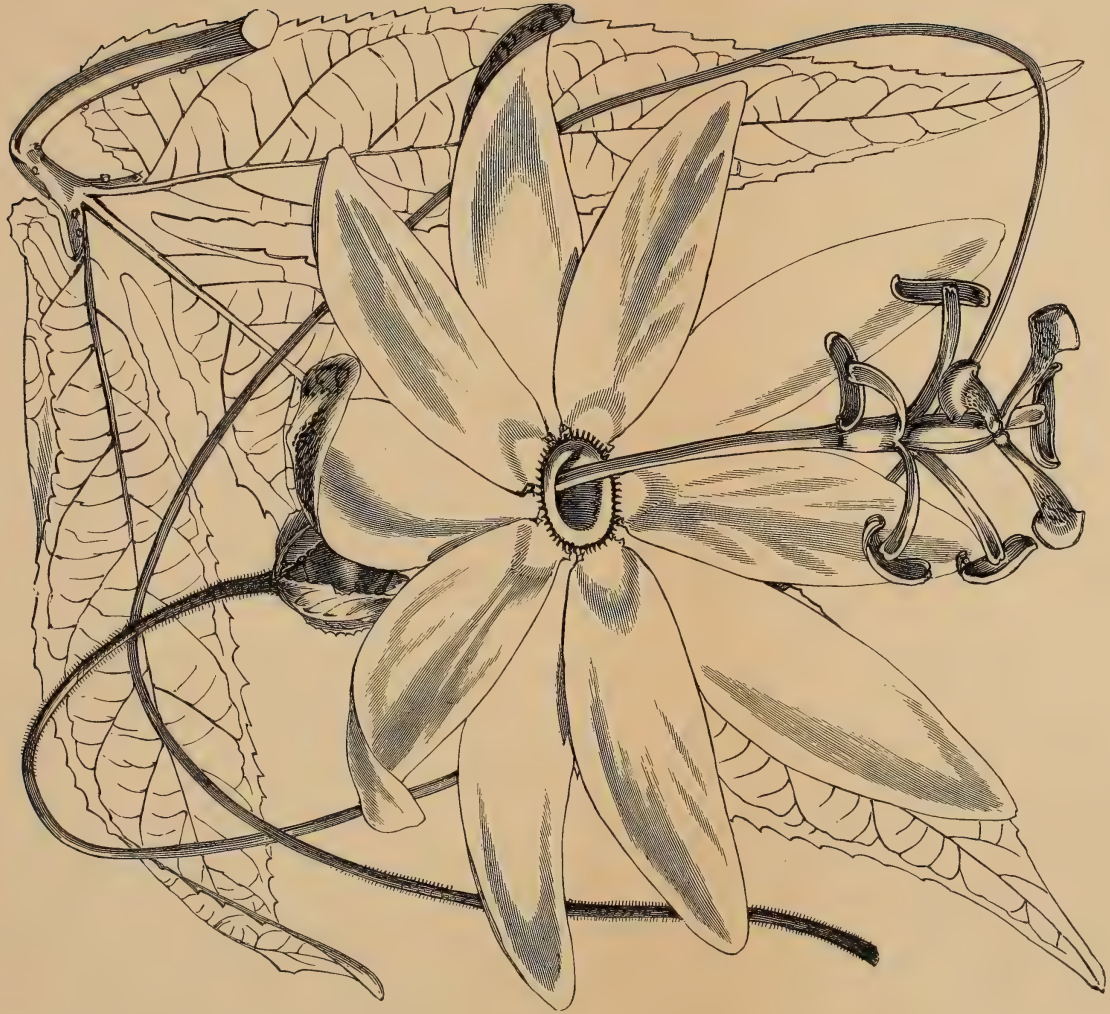
The atmospheric pressure was remarkably high, nevertheless south-westerly winds predominated, and the temperature was above the average, while the rainfall was greatly deficient.

XXXV. RESULTS OF METEOROLOGICAL OBSERVATIONS MADE AT CHISWICK IN THE YEAR 1873.

MONTH.	BAROMETER at 9 a.m.	TEMPERATURE.			RAINFALL.		NOTATIONS OF WEATHER.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		Air at 9 a.m.	Dew- point at 9 a.m.	Mean Max.	Mean Min.	Amount Inches.	Days.	At 9 a.m.						At 3 p.m.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
								b	c	o	m	f	r	s	b	c	o	m	f	r	s																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
January...	...	41.8	38.2	47.1	37.5	2.27	16	8	7	16	1	2	4	...	7	6	18	...	2</

DIRECTION OF WINDS AT 9 A.M., REFERRED TO 16 POINTS, WITH MEAN FORCE (BY SCALE 3 TO 12) :—

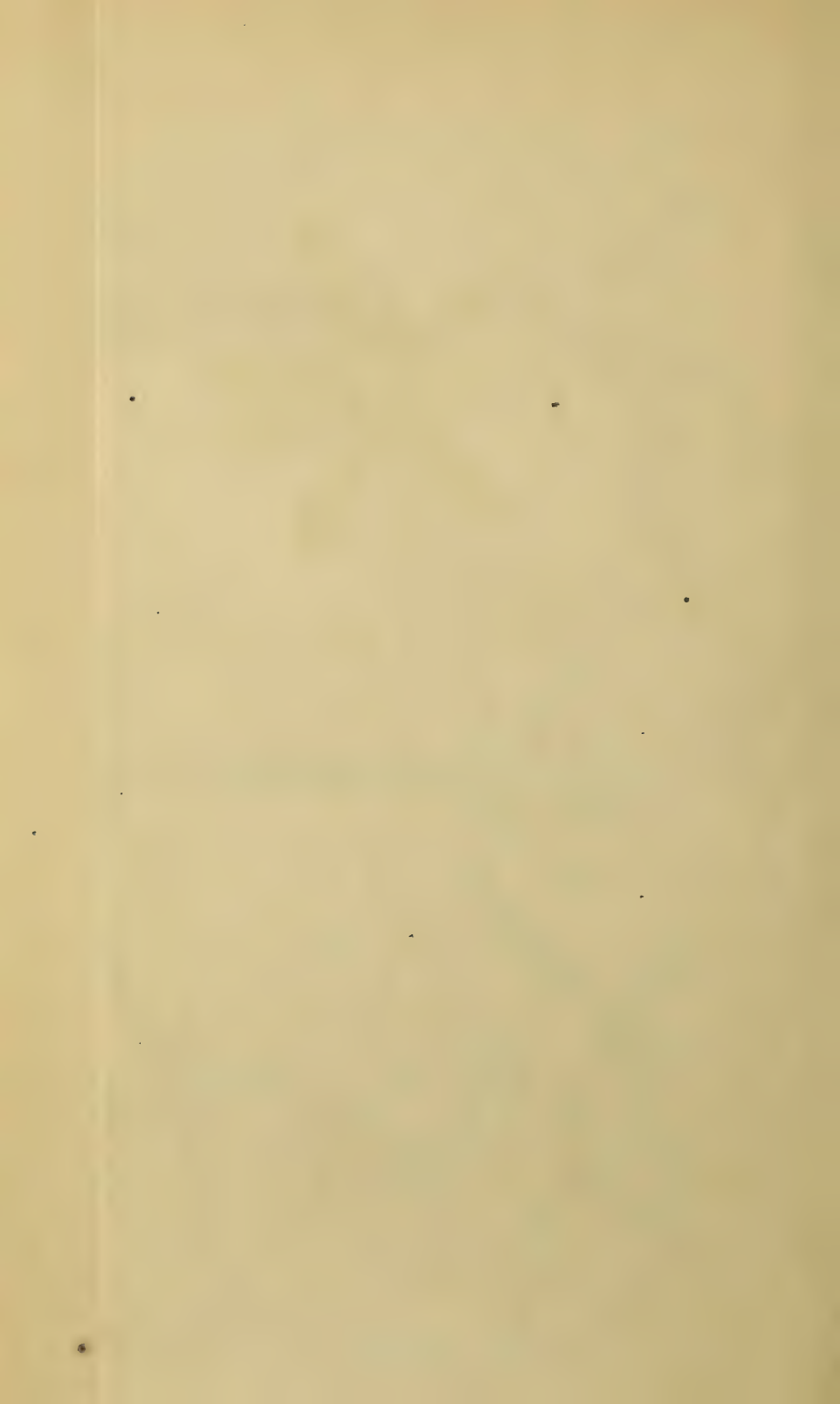
MONTHS.	N		NNE		NE		ENE		E		ESE		SE		SSE		S		SSW		SW		WSW		W		WNW		NW		NNW		NUMBER OF CALMS.	
	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F	O	F				
January.....	...	...	1	2.0	2	1.5	...	...	...	...	...	...	5	1.8	3	2.0	4	2.2	8	3.4	3	3.0	1	2.0	1	2.0	2	1.5	...	...	1	1.0	...
February.....	2	3.5	10	1.9	1	7.0	...	...	...	...	...	...	2	3.0	...	...	2	3.0	...	...	1	2.0	...	...	1	4.0	2	2.0	2	2.0	5	2.2	...
March.....	2	2.5	6	2.8	5	4.6	...	...	...	...	...	...	...	...	...	...	2	4.0	3	3.0	4	3.0	...	...	...	...	...	...	1	5.0	1	3.0	...
April.....	1	4.0	9	3.2	3	3.7	...	...	...	...	...	...	...	2.5	...	...	2	...	...	...	1	3.0	2	2.5	...	...	...	3	3.0	2	5.0	1	...
May.....	9	3.0	2	4.0	3	3.3	5	2.8	1	2.0	...
June.....	2	3.0	3	4.3	1	6.0	2	1.5	...	1	3	4.0	2	1.0	2	2.0
July.....	6	2.7	1	1.0	2	2.5	10	3.9	5	3.0	1	4.0	1	3.0	2	4.5	...
August.....	...	...	...	...	...	...	...	...	...	...	...	...	1	4.0	1	1.0	7	3.4	6	4.3	4	4.2	2	5.5	1	4.0	1	6.0	...	...	...	...	...
September...	3	4.0	1	5.0	...	...	...	...	...	...	...	...	3	1.7	1	1.0	2	4.5	2	4.5	5	3.8	6	4.5	1	6.0	...	...	...	...	...	...	...
October.....	1	3.0	2	3.0	2	2.5	...	...	...	...	...	...	2	1.0	2	1.5	5	2.2	4	2.3	5	4.8	1	5.0	2	2.5	1	2.0	1	1.0	...	...	...
November...	...	...	5	2.6	3	3.3	...	...	...	...	...	...	2	2.5	3	3.0	2	2.0	2	1.5	3	3.7	1	2.0	...	...	...	4	4.0	...	...	...	...
December...	...	...	1	2.0	1	2.0	...	...	...	...	...	...	2	2.0	2	1.5	1	2.0	3	2.3	5	2.6	5	2.6	2	4.5	...	1	1.0	...	...	...	...
Year	11	3.4	47	2.8	20	3.6	6	2.0	7	2.7	4	2.3	30	2.4	15	2.1	30	2.9	42	3.5	42	3.5	23	3.7	22	3.5	20	3.7	15	2.9	17	2.6	14	



TACSONIA VAN-VOLXEMII, Hook.



TACSONIA INSIGNIS, Mast.





PASSIFLORA SANGUINOLENTA, *Mast.*



Mr Kemp's Gloire de Dijon

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ADVERTISEMENT.

Fellows and Correspondents of the Society are invited to communicate materials for this Journal, under cover, to the Rev. M. J. Berkeley, Sibbertoft, Market Harborough, or Prof. Thiselton Dyer, Royal Hort. Soc., South Kensington.

Vol. IV.]

[Part 16.

THE
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EDITED BY

THE REV. M. J. BERKELEY, M.A., F.L.S., F.R.H.S.

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1877.

PRICE TWO SHILLINGS.

XXXVI. Report on Onions Grown at Chiswick for Trial by the Fruit and Vegetable Committee of the Royal Horticultural Society, 1875. By A. F. BARRON.

THE seed for this trial was furnished by the following gentlemen, viz. :—Messrs. Barr & Sugden; Messrs. Carter & Co.; Messrs. Cutbush & Son; Messrs. Benary, Erfurt; Messrs. Nutting & Son; Messrs. Sutton & Sons; Messrs. Veitch & Sons; Messrs. Vilmorin et Cie., Paris; Messrs. Harrison & Sons; Messrs. Stuart & Mein; Messrs. Piccirillo; Messrs. Hovey & Co., Boston; Mr. Dancer; Mr. J. Perry; Mr. A. Parsons; Mr. R. Dean.

The seed was sown on March 16th in well-pulverised, moderately rich soil, which had the previous season been well manured for Celery. The season was on the whole favourable for the growth of Onions, so that the trial was so far of a very satisfactory character. Altogether 155 samples were sown, representing ninety-eight different names, of which number twenty are here described as quite distinct.

The report only extends to those varieties which have been proved to be well adapted for spring sowing and early autumn or winter use, the remainder of the Tripoli and Silver-skinned sections being again submitted for trial as autumn-sown Onions.

1. *White Spanish.*

Synonyms.—Banbury (Perry); Banbury Improved; Nuneham Park; Improved Nuneham Park; Reading; Improved Reading; Naseby Mammoth (Carter & Co.); Oxonian Prize (Nutting & Son); Cutbush's A 1 (Cutbush & Sons); Portugal; Cantello's Prize (Waite, Burnell & Co.)

This variety is the one most generally cultivated. The plant is of free growth, the neck of medium size, and ripens off early and well. The bulbs are large, a fair-sized specimen measuring about 12 inches in circumference, and from 2 to 2½ inches in thickness. The shape is flattened, the base broad, flat, frequently a little hollowed and uneven, somewhat globular towards the stalk in the best forms. Skin pale straw, falling off readily and exposing the pale greenish-yellow outer flesh. The flesh itself is firm and solid, almost white, and of excellent quality. This variety keeps generally in good condition up to the month of March. The Banbury and Nuneham Park forms were the most improved.

2. *Large Straw-coloured* (Vilmorin).

Synonym.—Yellow Flat (Hovey & Co.)

This is only to be distinguished from the White Spanish by the darker colouring of the outer skins.

* *Yellow Lescure* (Vilmorin); *Yellow Cambrai* (Vilmorin).

These were considered very spurious stocks of the Large Straw-coloured.

3. *White Globe*.

Plant of free growth, forming in general a small neck; ripens off early and well. The bulbs are of medium size, from 9 to 10 inches in circumference, and about $2\frac{3}{4}$ inches in depth. The shape is somewhat globular or obovate, with a finely rounded high crown. The skin is pale straw like the White Spanish, and it is, indeed, similar to that variety in every other respect but its more globular form. It is an excellent keeping sort, and much esteemed.

White Intermediate Oscar (Cutbush & Sons).

These are mixed and indifferent stocks of White Globe and White Spanish.

4. *Trebons* (Vilmorin et Cie.; Stuart & Mein).

Plant of free growth, but somewhat tender, succeeding best in a warm season. Neck somewhat gross. The bulbs are of very large size—about 13 inches in circumference, and from 3 to $3\frac{1}{2}$ inches in depth. The shape is obovate, the base somewhat broad and flat, whilst the top tapers more to the stalk or neck. The skin is pale straw, and peels off readily like the White Spanish. The flesh is pale and rather soft in texture, but of mild and excellent quality. This is a very large and handsome Onion for early autumn use. It does not keep well, and generally begins to shoot before Christmas. It bears a close resemblance to the imported Spanish Onions.

5. *Yellow Danvers* (Hovey & Co.; Vilmorin et Cie.; Carter & Co.)

Synonym.—Danvers Yellow.

This is a very fine and distinct Onion. The plant is of free growth, the top slender, of a rather pale green colour, and with a very fine slender neck, so that it ripens off well. The bulbs are of

medium but very even and regular size, from 10 to 11 inches in circumference, and about $2\frac{1}{2}$ inches in depth. The shape is roundish globular, very regular, with a small base and a small neck. The skin is of a dark straw colour, the outer coating peeling off freely, but not exposing the flesh; the inner coating remaining firm, giving the Onion a very neat, clean appearance. The flesh is very firm and solid throughout, and of fine quality. A splendid keeping variety.

New German (Veitch & Sons).

This bears a close resemblance to Danvers Yellow, but scarcely appears to keep so well.

6. *Brown Globe.*

Synonym.—James's Keeping.

This is of the same character as the White Globe, but having darker or reddish-brown skins; some are pale-fleshed throughout; others, these being the darker-skinned, have a slight shading of red as an outside coating of the various layers, as in the Red varieties. It is an excellent keeping variety, and much esteemed. The James's Keeping of some is more flattened near the crown, forming a sort of shoulder to the stalk, and of others again it is similar to the Pear-shaped.

Magnum Bonum (A. Parsons)

is a very fine selection of the Brown Globe.

Brown Intermediate; Bedfordshire Champion.

These are mixed stocks of Brown and White Globe.

7. *Pear-shaped.*

Synonym.—Pyriforme.

This is allied to the Globe section, and may be described as an elongated form of that variety. The plant is of free growth, the great majority producing very thick necks with very little bulb, so that they do not ripen off well. The true form is like that of a long Pear, tapering mostly towards the stalk, from 7 to 8 inches in circumference, and from 4 to 5 inches in depth or height. The skin is of a dark-reddish brown, and falls off readily. The flesh is moderately firm and solid, but it is not a very good keeping sort, and its shape does not recommend it. A good selection of this is sometimes sent out as James's Keeping.

8. *Deptford*.

Synonyms.—Brown Spanish; Improved Brown Spanish; Strasburg; Strasburg Dutch; Pale Red Niorte; Light Red Strasburg.

Plant of free growth and very hardy, forming a small neck and ripening early. The bulbs are of medium size, flattened or oblate, of pretty even and regular form. The skin is of a dark reddish-brown colour. The flesh firm, solid, tinged with red. An excellent keeping variety.

9. *French Strasburg*.

Synonym.—Pale Red St. Brieux.

This is distinct from the Deptford or English Strasburg. The bulbs are smaller, of very uneven shape, and frequently split open into several crowns. They are of a dull reddish colour. Altogether very inferior varieties of the Deptford class.

10. *Deep Blood Red*.

Plant of free and hardy growth. Bulbs of medium or rather small size, flattened or oblate, and generally of very even and regular form. The outer skin is of a dull red colour; the inner coating of a deep glossy red. The flesh itself is pure white, it being only the outside coating of the various layers that are coloured, and these become paler towards the centre. It is very firm and solid throughout. This is the strongest flavoured Onion, and the latest keeper. On these accounts it is a valued variety.

Blood Red.

This is simply a paler-skinned variety of the preceding, and the most common.

11. *Wethersfield Red* (Hovey & Co.; Carter & Co.; Benary & Son).

Synonym.—Bright Red Mezieres (Vilmorin).

Plant of free and robust growth. The neck small, ripens off freely. Bulbs large, flattened or oblate, very even and regularly formed, about 12 inches in circumference and 2 inches in depth. The outer skin is of a light dull red colour, and peels off freely; the inner coating being light purplish, shading greatly from the crown to the base, where it is very pale. The flesh is pure white, the outer surface of the coating only being coloured. It is very firm, solid, and of mild and excellent quality, and keeps well. A

remarkably fine and handsome Onion from America. The finest type of Red Onion.

12. *Early Red* (Hovey & Co.)

This is a rather early red variety. The bulbs are of medium size, flat, of a very dull red colour. The flesh is firm and solid, and of good quality. It showed a tendency to the production of several crowns, which burst and spoil the bulbs, and prevent them keeping.

13. *Two-bladed*.

This name is given to denote its peculiarity of only producing two blades or leaves. These form small bulbs very early in the season, and soon ripen off; a great majority, however, grow into larger bulbs, and these have the ordinary number of leaves. The true two-leaved type has small roundish bulbs about an inch in diameter. The skin is of a dull yellowish brown colour; the flesh greenish white, and frequently a little coloured. They are very firm and solid, and keep well. The small size makes it useful for pickling purposes.

14. *Teneriffe* (Benary & Son).

This greatly resembled in appearance the smaller types of the Two-bladed.

15. *Silver-skin* (Nutting & Son).

Synonyms.—Silver-skin Pickling (Veitch); Early White Silver-skinned (Benary & Son); White Round Early Hard Dutch (Vilmorin et Cie.)

The bulbs are of medium size, roundish oblate; a great many are apt to split open. The outer skin is pure white or silvery, peeling off freely and exposing the next coating, which is white with green veinings. The flesh is pure white, exceedingly firm and solid. Keeps remarkably well, and is useful to those who prefer very white onions. This is quite distinct from the Paris Silver-skin, which does not keep well.

16. *Queen*.

Synonyms.—New Queen; Piccirillo's New Queen.

This is a very small and very early variety of the Silver-skinned section. It forms bulbs almost as quickly as a Radish, and has rarely more than two or three leaves. They were fully grown

last season by the 1st of June, about fifteen days earlier than the White Italian Tripoli, which variety in the late trial it most nearly resembled. Many large and later-growing examples were observed in each sample, which, if the seed was not mixed, implies a tendency to deterioration. In this, as in other respects it exactly resembles the Nocera as introduced from Italy about thirty years ago, and the Florence White of earlier date.

N.B.—All the section of Silver-skinned Onions, including the Queen, White Italian Tripoli, Marzajola, Nocera, Paris Silver-skin, Early White Naples, and White Lisbon, also the Giant Tripoli section, including the Giant Rocca, Red Sallow, Madeira, &c., which are found valueless as spring-sown varieties, will form the subject of a separate report when their respective merits have been tested as autumn or winter-sown Onions.

17. *Potato Onion.*

Synonym.—Underground Onion.

This is not propagated by seeds. The small bulbs are planted in the ground like Shallots, and around these a number of new bulbs are produced. These bulbs are of average size, of somewhat irregular shape; the skin reddish brown, hanging very loosely. The flesh is tolerably firm and solid, and of fair quality. It does not keep well, but is useful for procuring an early supply of Onions.

18. *Egyptian.*

Synonyms.—Egyptian Bulbiferous; Tree Onion; Garden Rocambole.

This variety when planted throws up a stem on which, instead of flowers, small bulbs are produced of about the size of small marbles, which are very excellent for pickling. It is propagated by planting these bulbules (the largest of which will bear bulbs the same season), or by the bulbs which are formed in the ground, and which have not formed stems.

19. *American Perennial Tree, or Top Onion* (Carter & Co.)

This produces small bulbules in the same manner as the Egyptian Bulbiferous, but of a much smaller and inferior character. No bulbs are formed in the ground. The plant is perennial; the roots are long and fibrous.

20. *Welsh.*

Of this there are two varieties, the Red and the Green. The plant is an herbaceous perennial, and forms no bulbs; the roots are long and fibrous. The green tops or leaves only are used. It may be propagated by seed or by division of the roots.

XXXVII. Report on Celeries Grown for Trial by the Fruit and Vegetable Committee of the Royal Horticultural Society at Chiswick, 1874-5. By A. F. BARRON.

THE seed for this trial was presented by Messrs. Carter & Co.; Messrs. Barr & Sugden; Messrs. Minier, Nash, & Nash; Messrs. Harrison & Sons; Messrs. Osborn & Sons; Messrs. Stuart & Mein; Messrs. Veitch & Sons; Messrs. Vilmorin et Cie.; Samuel Simpson, Esq.; Mr. R. Dean; Mr. A. Parsons.

There were forty-seven reputed varieties received, of which twenty-three were red and twenty-four white. These the Committee by the detection of numerous synonyms reduced to twenty—viz., seven red varieties and thirteen white, which have been decided to be distinct.

The seed was sown early in March in heat, and the plants pricked-off and planted-out early in June in single trenches, and treated after the ordinary manner. The plants were frequently examined by the Committee whilst growing, and again when fully grown, and a portion of each sort was left to test their capabilities of standing the winter.

The season of 1874 was a particularly favourable one for the growth of Celeries, so that the trial was a satisfactory one.

I. RED VARIETIES.

1. *Manchester Red.*

Synonyms.—Laing's Mammoth; Radford's Pink; Sulham Prize Pink; Hooley's Conqueror Prize; True Manchester; Giant Red.

Plant of strong and vigorous growth, attaining an average height of 3 feet 4 inches. Leaflets broad, green. Heads compact, average girth 12 inches. The outer leaf-stalks are moderately broad, slightly shaded with red. Heart very solid; the stalks,

broad, thick, and fleshy, blanching for about 12 inches. A very excellent sort; stands the winter well. This is the largest variety.

2. *Ivery's Nonsuch.*

Synonyms.—Violet de Tours; Osborn's Select Red; London Market Red.

Plant of strong and vigorous growth and habit. Average height 3 feet. The leaflets are broad, deep green, the pinnæ more widely situate than in other varieties. Heads compact, average girth 12 inches. The outer leaf-stalks flat, of a deep rosy-red colour. Hearts very solid, blanching for about 13 inches; stalks very solid, broad, thick, and crisp, of a fine nutty flavour. A very excellent sort, and one of the best to stand the winter.

3. *Kimberley's Red.*

Synonyms.—Improved Solid Red; Stuart and Mein's Solid Red.

Plant of regular but somewhat spreading habit of growth. Height 2 feet 6 inches. Leaflets broad, deep green. Heads compact, average girth 11 inches. The outer leaflets narrow, rounded, and slender, of a deep rosy-red colour. Hearts very solid, blanching for about 12 inches; the stalks broad, thick, and crisp, of a fine nutty flavour.

4. *Carter's Incomparable Crimson.*

Synonyms.—Carter's Incomparable Dwarf Crimson; Hood's Dwarf Red.

Plant of close compact growth. Height 2 feet 6 inches. Leaflets rather broad, pale green. Heads very compact, average girth 11 inches. Outer leaflets narrow, deep rosy-pink. Hearts very solid, blanching for about 11 inches; the stalks thick and fleshy, and of fine quality. This is the dwarfest red Celery, and a good hardy variety to stand the winter.

5. *Webster's No. 1.*

Synonym.—Webster's No. 4.

Plant of somewhat slender growth. Height 2 feet 10 inches. Leaflets broad, with short petioles, giving it a bushy, compact appearance. Heads compact, average girth $10\frac{1}{2}$ inches. Outer leaf-stalks slender and narrow. Heart solid, blanching for about 12 inches; the stalks solid, thick, very crisp, and of good quality.

6. *Leicester Red*.

Synonyms.—Major Clarke's Solid Red; Turnmoss Red; Ramsey's Solid Red.

Plant of erect compact growth, presenting a very uniform appearance when growing. Height 3 feet. Leaflets rather small, deeply serrated, of a shining green colour, with a sort of silvery shade. Heads very round and compact, average girth 12 inches. The outer leaf-stalks are rather narrow or rounded, of a clear rosy-pink colour. Hearts very solid, blanching well for about 12 inches; the inner stalks broad and thick, very crisp, and of a fine nutty flavour. One peculiarity of this Celery is that of the core rising about 2 inches in the heart, as if it were to run to seed. This core portion is by many considered the best part. This variety, from its close compact growth, blanches easily, and is the best Celery for autumn or early-winter use, but it does not stand the winter well.

7. *Wright's Improved Grove Red*.

Plant of the same appearance as Leicester Red, but somewhat dwarfer. The heads are also larger, being 18 inches in circumference. Hearts large, very solid, and good. This is a very excellent sort.

II. WHITE VARIETIES.

8. *Grove White*.

Plant of strong and robust growth. Height 2 feet 9 inches. This is an exact counterpart of the Grove Red, but white, and possessed of the same excellent qualities. Does not stand the winter so well as other sorts.

9. *Incomparable Dwarf White*.

Synonyms.—Plein Blanc Court Hatif; Sandringham; Dean's Compact White.

Plant of very dwarf and compact growth. Height about 24 inches. Leaflets small, pale green. Heads very compact, average girth about 10 inches. Outer leaf-stalks broad and deeply ribbed. Hearts solid, blanching about 10 inches, and of a pure white; the stalks broad, thick, fleshy, crisp, and of fine quality. This is one of the best sorts; its close dwarf growth renders it easy to blanch with remarkably little earthing-up. It is good for early use, and also stands the winter well.

10. *Plein Blanc*.

Plant of dwarf compact habit. Height 24 inches. This is much

of the same character as the preceding, but smaller and inferior. It is useful for an early supply.

11. *À Couper.*

Plant small. Height about 24 inches. Leaflets small. Heads small. Outer leaf-stalks very narrow. This is not of much use, only for very early work, the small heart blanching very quickly. It soon runs to seed.

12. *Turc Grand.*

Plant of robust growth. Height 2 feet 6 inches. Leaflets large, broad, deep green. Outer leaf-stalks broad, much ribbed. Heart small. It may be useful for an early supply, but soon runs to seed.

13. *Seymour's White.*

Synonyms. — Goodwin's White; Northumberland Champion White.

Plant of somewhat spreading habit of growth. Height 3 feet. Heads large, 12 inches in girth. Outer leaf-stalks broad, very deeply ribbed. Hearts solid, blanching to nearly 14 inches; the stalks broad, thick, and fleshy. This is the largest-growing white Celery, and apt to become pithy if very strongly grown.

14. *Prizetaker White.*

Synonym. — Veitch's Silver White.

Plant of somewhat slender growth. Height 3 feet. Leaflets small, deep green, sharply serrated. Heads large, girth 11 inches. Outer leaf-stalks narrow. Hearts somewhat loose, blanching to about 12 inches; the stalks rather soft, but of fine flavour. Rather tender.

15. *Dixon's Mammoth White.*

Plant of close compact robust growth. Height 2 feet 3 inches. Leaflets broad. Heads large, girth 14 inches. Outer leaf-stalks very broad, about 2 inches. Hearts very large, blanching about 11 inches, somewhat soft, but excellent. It stands the winter well.

16. *Great Eastern.*

Plant of loose spreading habit, so much so that it is difficult to keep the heads together, and much addicted to throwing up side

shoots. Height 2 feet 9 inches. Leaflets small, pointed, very pale green. Heads small, girth 10 inches. Hearts loose and small. A very worthless sort, and decays early.

17. *Haywood's White Queen.*

Synonyms.—Stuart & Mein's Giant White; Goodall's Flat-stalked; Webster's White.

Plant of robust growth. Leaves spreading. Height 2 feet 9 inches. Heads large, 13 inches in girth. Outer leaf-stalks very broad (about 2 inches), much ribbed, and coarse. Hearts solid, blanching to about 14 inches; the stalks very large, broad, thick, and fleshy, but without much flavour. An excellent sort to stand the winter.

18. *Veitch's Solid White.*

Synonym.—Danesbury.

Plant of close compact growth. Height 2 feet 6 inches. Leaflets broad, very deeply toothed or serrated, giving it quite a distinct appearance. Heads compact, girth 11 inches. Outer leaf-stalks rather broad, deeply ribbed, pale green. Hearts very firm and solid, blanching for about 12 inches; the stalks broad, thick, crisp, and tender. A very excellent variety, and stands the winter well.

19. *Boston Market.*

Plant dwarf, from 18 to 20 inches high. Leaflets small, pointed, and sharply serrated. This variety is not used to produce a single head as the ordinary Celeries, but having the peculiarity of forming a number of side shoots or small heads which are blanched. It is suited for early work, and it begins to run to seed almost as soon as planted out.

20. *Frisé, Curled or Garnishing.*

Plant of loose growth. Height about 2 feet. Leaves very pale green, and deeply cut or curled, almost like Parsley. It is very ornamental. The leaves may be used for garnishing, but it is of no other use. It is very tender, and runs early to seed.

21. *Turnip-rooted or Celariac.*

Synonyms.—Celeri navet; Rave; Rave d'Erfurt; Soup Celery.

This is quite a distinct vegetable, the plant forming a large bulb at the base of leaf-stalks like a Turnip. This bulb is used in

soups much in the same way as Turnips, and not the leaf-stalks as in other Celeries, and requires no blanching. It is not much cultivated in this country.

XXXVIII. Report on Red and White Currants fruited at Chiswick,
1875. By A. F. BARRON.

THERE is, perhaps, no class of fruits in ordinary cultivation in this country in which so much confusion exists in regard to their nomenclature or their distinctive merits as in that of Currants. Names exist in plentiful variety, but the fruits of all the kinds are very similar, so that it has been impossible to distinguish them. The varieties may vary to some extent as to the size of the bunches, berries, their colour, cropping qualities, &c.; but as these are considerably affected by cultivation, situation, &c., their comparative and distinctive merits can only be ascertained when all the varieties are grown together under the same conditions, as in the present instance.

The collection, consisting of forty-five reputed distinct varieties, was got together from various quarters, and represents the most of the names to be met with in English nurseries and a few of the French. Altogether there exist about sixty distinct names as applied to the Red Currants and about fifteen to the White, so that the remainder have to be collected and described.

The classification is based chiefly on the appearance of the plants, their foliage, habit of growth, &c. This is very decided, distinct, and easily to be recognised. The typical names adopted may not in every instance be correct, but the varieties given as synonyms are all identical the one with the other as they have been received by the Society. There is no means of distinguishing any of the varieties by their fruit alone.

REDS.

1. *Red Dutch.*

Synonyms.—Fertile; Fertile d'Angleterre; Fertile de Palluau; Fertile de Bertin; La Hâtive; Hâtive de Bertin; Bertin No. 9; Belle de St. Gilles; Chenonceaux; Grosse Rouge de Boulogne; Queen Victoria; Red Grape.

This is one of the best varieties in cultivation. A most abundant bearer, and ripening early. The bunches are long, and the berries large, full, and juicy, of a bright red colour. The plant is of a dwarf and somewhat slender habit of growth, never attaining a large size. The leaves broad and flat, deep green, having a sort of metallic glaucous hue, which renders it in appearance quite distinct. The synonyms here given are all referable to this one variety, and which is the one generally grown and known in this country as the Red Dutch.

2. *Knight's Large Red.*

Synonyms.—Knight's Sweet Red; Goliath; Fielder's Red Palmer's Late Red; Pitmaston Red; Pitmaston Prolific; Large Sweet Red; Bertin No. 1; Dancer's Selected.

This variety is not quite so early as the Red Dutch. It is a most abundant bearer. The bunches are long, and produced in immense clusters. Berries of medium size, of a bright red colour. The plant is of strong and vigorous growth, the shoots growing mostly erect. Leaves pale green, rather small, somewhat deeply cut and crumpled in appearance. This variety is the one in most general cultivation in the market gardens around London, having probably been selected for its fine vigorous constitution. Messrs. Krelage, of Haarlem, sent fruiting branches of this variety as the true Red Dutch Currant as grown in Holland.

3. *Old Red.*

Synonym.—Rouge Commun.

This greatly resembles the preceding. The plant is of most robust growth, but a poor cropper and with small berries. It is most probably the original stock from which Knight's Large Red, the present common variety, has been selected.

4. *Red Cherry.*

Synonym.—La Versaillaise.

The berries of this variety are very large and handsome, almost like small cherries; but they are produced very sparingly, the bunches frequently consisting of only one berry, and from twenty to thirty berries on a plant. The plant is of a gross spreading habit of growth. The shoots pale, very gross. Leaves very large, broad, deep green. It is unsuited for cultivation in the open ground, as the shoots from their gross nature break off so easily,

and so no plant is formed. The buds do not break freely after pruning. Grown against a wall it is more satisfactory.

5. *Houghton Seedling.*

Synonyms.—Houghton Castle ; Orangefield.

This is a late variety. The berries of medium size, deep red, and rather acid. Bunches long, produced in very thick clusters. A most abundant cropper. The plant is of a very robust, close-growing, stubby habit, very rarely producing long shoots. The leaves are small, deep dark green, somewhat deeply cut and crumpled in appearance. Very distinct. This variety, from its close compact habit of growth and sturdy constitution, is very suitable for growing in exposed situations and for training as an espalier or pyramid.

6. *Gondouin.*

Synonyms.—Raby Castle ; May's Victoria ; Imperiale Rouge-d'Hollande à grappes longues.

This is a remarkably strong-growing late variety. The bunches are very long. Berries large or above medium, of a bright red colour with a sharp acidity. As a bearer it is only medium. The plant is of a most robust growth, soon forming large bushes. Shoots strong, reddish. Leaves large, dark green, with reddish veinings, flat, deeply cut, very showy, and very distinct. The flowers have also a reddish tinge. This is one of the latest Currants to ripen and hang well on the plants afterwards. The plant, from its strong vigorous growth, is very suitable for growing as standards or large bushes.

7. *Verrière Rouge.*

This appears to be a compact dwarf-growing form of the Gondouin.

8. *Mallow-leaved.*

Synonym.—New Street Red.

This is a strong-growing late variety. Bunches long. Berries small, of a pale red colour. Late in ripening and a somewhat poor cropper. The plant is of very distinct appearance, strong, tall-growing, with pale shoots. Leaves large, flat, soft, downy like a Mallow, of a pale green colour, sometimes like the Black Currant.

9. *Lace-leaved.*

Synonyms.—Large Sweet Red ; Large Red ; d'Hollande à feuilles bordées.

A fine compact-growing bushy variety. Bunches of a medium size. Berries medium, of a pale red colour. A most abundant bearer. Shoots dark, spreading. Leaves dark green with a glaucous hue, and the greater portion, more especially those in the shade, having a narrow silver lacing or border, giving the plants a slightly variegated appearance. A very excellent good-habited variety.

10. *Cut-leaved.*

Synonyms.—À feuilles laciniées; Eyatt Nova.

Plant of somewhat slender spreading growth. Bunches of medium size. Berries small, of a pale red. A very poor cropper. Leaves small, deeply cut, or lacinated and pointed, rendering it very distinct in appearance.

11. *Variegated.*

Synonym.—À feuilles panachées.

This is a variegated-leaved form of the common Red. A poor cropper. The leaves are prettily variegated on their appearance in spring, but soon become dull and dingy.

12. *Striped-fruited.*

This in appearance resembles the common Red. Berries small, pale in colour, with one or two darker stripes, rather pretty. A very poor cropper. The Gloire des Sablons is stated to be a White variety, prettily striped with red. At Chiswick it proved the same as Gondouin.

13. *Champagne.*

Synonym.—Couleur de Chair.

This is remarkable on account of the colour of the berries, which are pale flesh, and their sweet flavour, being exactly similar to the White varieties. Bunches short. Berries small. The plant is of dwarf bushy habit and robust. Leaves broad, flat, having the appearance of the Red Dutch. It is an abundant bearer. A desirable variety.

WHITES.

14. *Common White.*

Synonym.—Blanche Commun.

Plant of dwarf bushy habit. Leaves small, deeply cut and crumpled in their appearance. Bunches small. Berries small.

15. *Wilmot's Large White.*

Synonym.—Blanche d'Angleterre.

Plant of free somewhat erect growth. Leaves large, flat. Bunch of medium size. Berries large, white. A good cropper.

16. *White Dutch.*

Synonym.—Blanche d'Hollande.

Plant, leaves, &c., of exactly the same appearance as the Red Dutch—dwarf, compact, bushy. Bunches large. Berries large, or very large, of a yellowish-white colour, very fine, juicy, and sweet. A great cropper.

XXXIX. Report on Plants Grown for Trial at Chiswick in 1875.
By THOMAS MOORE, F.L.S., Floral Director.

It was stated in the last Report of the Chiswick Board of Direction that the work in the floral department had been in some degree crippled by the diminished facilities granted to the Superintendent, but that nevertheless some very good work had been accomplished. This consisted in the cultivation, with the view to a comparison of their merits, of collections of eighty-two varieties of Bedding Pansies, of 125 varieties of Fuchsias, and of 350 varieties of Bedding Pelargoniums. The Floral Committee held several meetings during the blooming season for the critical examination of these collections, and awarded twenty-three certificates of merit to different varieties of Pansies, twenty-one certificates to the best varieties of Fuchsias, and seventeen certificates to Pelargoniums which were considered as improvements on those previously rewarded.

The following are descriptive notes of the several varieties in each group to which certificates were awarded, the notes being sufficient to give some notion of the habit, colour, and characteristics of the kinds, and also to afford some clue to their identification.

BEDDING PANSIES AND VIOLAS.

The varieties of these plants subjected to the test of trial were contributed by Messrs. Dickson & Co., Edinburgh; Messrs. Cocker

& Sons, Aberdeen; Mr. R. Dean, Ealing; Mr. G. Westland, Witley Court; Dr. Stuart, Chirnside, N.B.; Messrs. Milligan & Kerr; Messrs. Robertson & Galloway.

Those only are here described which obtained certificates. In several instances the certificates granted in 1874 under less favourable conditions were now confirmed. The plants were inspected by the Committee on June 9th, and again on July 16th. The following may be regarded as a selection of the best of the Bedding Pansies, chosen from the point of view of showing compactness and dwarfness of habit, profuseness and continuity of bloom, and useful and effective colours rather than that of size and shape in the individual flowers—chosen, in fact, for those special features which give them their value as bedding plants.

First-Class Certificates.

1. *Alpha* (Dickson & Co.)

A very compact-growing, vigorous-habited, free-flowering variety. Flowers large, bluish purple, with a reddish flush; the eye yellow, with a bilobed dark spot in front. Good and lasting.

2. *Bedfont Yellow* (Dean).

A free-growing, compact-habited sort. Flowers large, bright golden yellow, with pencilled eye. Good and effective.

3. *Blue Bell* (Dean).

A very showy variety of compact, spreading, free-blooming habit. Flowers numerous, medium-sized, mauve purple, with a small yellow eye pencilled with dark lines. The individual flowers are deficient in shape, but the effect of the mass is good, and the plant is a continuous bloomer. Awarded a first-class certificate in 1874, which was now confirmed.

4. *Blue Perfection* (Westland).

Of compact free-blooming habit. Flowers medium-sized, of a deep reddish mauve with yellow eye. A fine effective self-coloured variety. The variety sent in as Purple Perfection proved to be the same as this.

5. *Dr. Stuart* (Stuart).

Of dwarf compact habit. Flowers mauve purple, with small yellow eye surrounded by a narrow dark ring. A neat and pretty flower.

6. *Golden Gem* (Dickson & Co.)

A variety of dwarf spreading habit, and a free bloomer. Flowers large, deep yellow, with deeper eye, over which occur dark pencillings. Good and lasting. Awarded a first-class certificate in 1874.

7. *Lilacina* (Dean).

A charming variety of dwarf compact-spreading habit, free-growing, and very distinct. Flowers of moderate size, the upper petals of a reddish lilac, the lower ones bluish lilac, with small yellow eye. An exceedingly pretty and taking flower.

8. *Lothair* (Dean).

A novel variety, with a dwarf compact habit of growth. Flowers large, deep purple, with small yellow eye and broadish bronzy spot just below it on the lower petal. A distinct and rich-looking flower, of lasting quality.

9. *Lily-white Tom Thumb* (Dean).

A very useful variety, of free compact-spreading habit. Flowers white, with yellow eye and dark pencillings. The flowers are tolerably constant as to purity, but they occasionally blotch in hot weather. The first-class certificate awarded in 1874 was confirmed.

10. *Magpie*, or *La Pie* (Dean).

An old French variety, still useful because striking in appearance from the strongly contrasted colouring of its flowers. It is of vigorous but rather tall-growing habit, of a hardy constitution, and an abundant bloomer. Flowers blackish mulberry, with a large wedge-shaped spot of white at the tip of each petal; the spotting sometimes runs out, when for a time the flowers become self-coloured.

11. *Mulberry* (Dean).

A dwarf-growing variety of compact but spreading habit, and free-flowering. Flowers dark reddish plum purple, with very small yellow eye; the flowers are well displayed. The first-class certificate of 1874 was confirmed.

12. *Novelty* (Cocker & Son).

A showy variety, of free-growing habit, and growing rather tall. Flowers reddish or puce purple, with yellow eye; showy. A pleasing variety amongst the self-coloured flowers.

13. *Peach Blossom* (Dickson & Co.)

An attractive variety of close habit, and a free bloomer. The flowers, which are of good form, are of a curious motley colour, a reddish or puce-lilac, paler at the tips. Its neutral tint was thought likely to be useful in grouping.

14. *Princess of Teck* (Dean).

A very free-growing variety, and a continuous bloomer. The flowers are large, of good form, and of a pale bluish lilac. It is quite novel in colour, somewhat approaching that of *Lilacina*.

15. *Queen* (Dickson & Co.)

A variety of free compact habit, an abundant bloomer, but rather later than some others. Flower large, white, with yellow eye and dark pencilled lines. The first-class certificate awarded in 1874 was confirmed. It is not, however, a lasting sort, as it was quite out of bloom when inspected in July.

16. *Queen of Lilacs* (Dickson & Co.)

A variety of free bold habit, forming close vigorous tufts. Flowers reddish lilac, paler at the edge, being freely produced; a soft neutral colour, and useful for grouping. It was considered to be novel and effective, and on these grounds received the certificate.

17. *Royal Blue* (Dean).

A deep purplish blue, with a dark eye. A showy and attractive flower, of good quality, and lasting.

18. *Sovereign* (Dickson & Co.)

Of close-growing habit, dwarf, free, and prolific of blossoms. Flowers moderate in size, of a bright deep golden yellow, with a pencilled eye. Very effective, and a good lasting variety.

19. *The Tory* (Dickson & Co.)

A variety of free and vigorous growth, blossoming abundantly and continuously. Flowers large, deep bluish purple, with white eye and a bilobed mulberry spot in front of it. Good throughout the season. The first-class certificate awarded in 1874 was confirmed. Under the name of *Monarch* was grown a variety not distinguishable from this in the colour of its flowers.

20. *White Swan* (Dean).

A fine variety, of close tufted habit. Flowers of moderate size, pure white, with pencilled eye, of good substance, and very clean and chaste-looking. Fine.

21. *Williams* (Stuart).

A free-blooming variety, raised from *Viola cornuta* fertilised by True Blue, a dwarf *Viola* like Perfection. It is dwarf and spreading in habit, the individual flowers being small, *cornuta*-like, and of a light mauve colour. The plant is very effective from the great number of its flowers, which are produced in succession till late in the summer.

Second-Class Certificates.

22. *Snowflake* (Dickson & Co.)

A moderately vigorous sort, of free-flowering habit. Flowers white, with a yellow eye marked by a few faint lines.

23. *Tyrian Prince* (Dean).

A handsome variety, awarded a first-class certificate last year, but now ranked second-class; of free compact stout-growing habit. Flowers large, dark velvety mulberry purple, with small yellow eye.

A few of the sorts certificated in 1874 were passed over on this occasion as not being in a satisfactory condition as to habit or continuity of bloom. To this category belong Imperial Blue Perfection, Miss Maitland, Dickson's King, and Chieftain.

FUCHSIAS.

These were grown under glass, and consisted of young plants shifted-on into moderate-sized but rather small pots. They were examined just when they had reached their best condition as to bloom.

The plants were contributed by Messrs. Veitch & Sons; Messrs. F. & A. Smith; Messrs. Downie & Co.; Mr. G. Smith; Mr. Knight; Messrs. E. G. Henderson; Mr. Bull; Mr. Kinghorn.

First-Class Certificates.

§ 1. Whitish tube and sepal; red or purple corolla.

1. *Annie* (Veitch & Sons).

Of rather bold growth, but dwarf in habit. Flowers with short blush tube; reflexed flesh-coloured sepals; and large, open, carmine-red corolla. A free-flowering sort.

2. *Brilliantissima* (E. G. Henderson & Co.)

An erect-habited, rather vigorous-growing variety. Flowers with a greenish white tube, reflexed sepals, and a dark crimson corolla; very fine in colour, but rather small. Certificated on account of the habit of the plant, which was excellent, in the way of the variety called Lustre, but superior to it.

3. *Josephine* (E. G. Henderson & Son).

A variety of dwarf and stocky but rather vigorous growth. Flowers with long blush tube and short reflexed sepals, and bright rosy pink corolla.

4. *Marginata*.

Of free bushy habit, and a free bloomer. Flowers with short blush-white tube and reflexed sepals, and a rosy tinted corolla with crimson margin.

5. *Schiller*.

A finely-shaped, free-growing, bushy plant, of drooping habit. Flowers with a blush tube and spreading sepals, and a purplish corolla. The flowers are larger and better than those of Rose of Castile, which they resemble in colour. The habit is excellent.

6. *Starlight* (Veitch & Sons).

A free-growing and free-blooming variety of excellent habit. Flowers large, with long white tubes and sepals, and long bright rosy-lake corolla. One of the very best of the pale-coloured series.

7. *Water Nymph* (E. G. Henderson & Son).

A dwarf free-growing, bushy-habited variety. Flowers with blush tube and straight sepals and a crimson corolla. A very desirable variety.

§ 2. Scarlet tube and white corolla.

8. *Alexandrina* (Veitch & Sons).

A slender, drooping, free-growing, and exceedingly bright and attractive sort. Flowers with short bright red tube and reflexed sepals, and a fine white corolla.

9. *Mrs. E. Bennett*.

A free-blooming, free-growing, erect-habited variety. Flowers with very short red tube and long spreading sepals, and a very large spreading white corolla. Very distinct and fine.

The certificates already awarded to the following varieties in this section were confirmed—namely, to *Conspicua*, *Puritani*, and *Pursuit* (singles), and to *Enchantress* (double).

§ 3. Scarlet tube and purple corolla.

10. *Empress of Germany*.

A variety of dwarf bushy habit, dense, free-flowering, and ornamental. Flowers with a short tube and reflexed sepals of a coral red, and a large, spreading purple corolla.

11. *First of the Day* (E. G. Henderson and Son).

A variety of a dense, bushy, free-flowering habit. Flowers with a short coral-red tube, small reflexed sepals, and a large bold purple corolla.

12. *Inimitable*.

A variety of dwarf and free habit and ornamental character. Flowers medium size, with a coral-red tube and spreading sepals, and an expanded violet-purple corolla reddish at the base. It is something in the way of *Empress of Germany*.

13. *Wave of Life* (E. G. Henderson & Son).

A variety of weak and drooping but dense habit of growth. Flowers with short tube, and broad reflexed sepals of a brilliant coral-red, and a large, long, spreading, dark purple corolla.

In this group the certificates previously awarded to *Commander* and to *Noblesse* were confirmed.

§ 4. Scarlet tube, double purple corolla.

14. *Champion of the World* (F. & A. Smith).

A loose-habited variety with long weeping branches, and well adapted for furnishing a pillar or rafter in a greenhouse. The flowers are immensely large and full double; the tube and sepals coral-red, the latter tipped with green; the corolla purple, expanding to nearly $2\frac{1}{2}$ inches in breadth. It is the largest-flowered of all the double red Fuchsias.

15. *Mr. Lyndoe*.

A free-growing variety with very large flowers, of which the sepals are erectly reflexed and of a pale red, and the corolla bold but somewhat irregular, and of a deep purple.

16. *Prince Leopold* (Veitch & Sons).

In this variety the plant is of a bushy drooping habit and free. Flowers with a short tube and reflexed sepals, and a dark purple compact double corolla.

17. *Triumphant* (Veitch & Sons).

A variety of rather spreading growth and tolerably free-flowering, altogether an exceedingly promising sort. Flowers with a slender tube and erect palish red sepals; the large, full, dense corolla of a rich deep purple. The individual flowers are exceedingly fine and well-formed.

Of this group the variety named Marksman had the previous certificate confirmed.

§ 5. Pink tube and purple corolla.

18. *Hugh Miller* (Veitch & Sons).

A variety of free and vigorous but bushy drooping habit, well adapted for furnishing a pillar or rafter, being not only showy, but distinct in character. Flowers large, with a long slender pink tube and spreading green-tipped sepals, and a bold and spreading purple corolla. A very effective ornamental variety.

§ 6. Variegated leaves.

19. *Aucubæfolia* (E. G. Henderson & Son).

A very ornamental variegated-leaved variety, having greater merit from this point of view than from that of its flowers. The

leaves have a large creamy-white and conspicuous central blotch, and when this variegation is well-marked the plant is very handsome; but it is a form of variegation very apt to run out unless care is taken in the selection of cuttings. The flowers are freely produced, and have a long red tube and sepals, the latter not being spread out or reflexed. The certificate was given for the variegation.

20. *Sunray* (G. Smith).

A beautifully variegated Fuchsia, the finest yet sent out, with red variegated foliage, which is quite ornamental. The flowers have red tube and sepals and a purple corolla. It was certificated for its variegation.

Second-Class Certificates.

21. *Albo-coccinea*.

A variety of free-growing drooping habit, and adapted for a pillar or rafter. The flowers have a red tube, white spreading sepals, and a spreading purple corolla. It belongs to what is called the fancy class, and is both distinct in character and gay in appearance.

The Rose of Castile had the second-class certificate, previously awarded to it as a useful variety for decorative purposes, confirmed on this occasion, being still regarded as useful for conservatory work.

BEDDING PELARGONIUMS.

A very extensive collection of these indispensable flower garden plants was arranged for comparison in the trial beds at Chiswick. The collection extended to 350 varieties, which were contributed by Mr. J. Fraser; Mr. G. Smith; Mr. Charlton; Messrs. F. & A. Smith; Mr. W. Paul; Mr. Tirebuck; Mr. Cannell; Dr. Denny; Messrs. Carter & Co.; Messrs. E. G. Henderson & Son; Messrs. Downie, Laird & Laing; Mr. T. Laxton; Mr. J. Pearson; Mr. W. Bull; Messrs. Veitch & Sons; Mr. R. Dean; Mr. E. Bland; Mr. Kneller; Mr. H. Little; Mr. W. W. Burrell; Mr. F. Dodds; Mr. G. George; Messrs. Low & Co.; Mr. Davie; Mr. J. King; Messrs. Dickson & Co.; Mr. C. Turner; Mr. F. Miles; Messrs. Garaway & Co.; Mr. J. Salter; Messrs. Cocker and Son; Mr. Hodgson; Mr. Mews; Mr. Kinghorn; Mr. Porter; Mr. Chater; Mr. Barnett; Mr. Rawson; Mr. Orchard; Mr. Tillery; Mr. Evans; Mr. Grove; Mr. J. Ingle; Mr. Wimsett; Mr. F. W. Durrent; Messrs. Osborn

& Sons; Mr. Swarback; Mr. G. Acton; Mr. Sampson.; Mr. J. Clark; Mr. H. Park; Mr. S. Davis; Messrs. J. & C. Lee; Messrs. Bell and Thorpe; Mr. Tipping; Mr. S. Ford.

The following are the certificated varieties:—

First-Class Certificates.

§ 1. Scarlets.

1. *Harry King* (E. G. Henderson & Son).

A showy variety of moderately vigorous habit, with zonate leaves; the flowers are of good shape, freely produced in moderate-sized trusses of a bright scarlet, with a white eye.

2. *Rosa Little* (H. Little).

A dwarf-habited variety, the leaves having a vandyked zone; the flowers, of which both pip and truss are large and fine, are of a rich deep solid scarlet colour, with a small white eye. The flowers are well displayed, and of exquisite shape.

3. *Tyrsal Rival* (Laing).

A dwarf compact-growing variety, the leaves of which are marked with a dark zone; the flowers are large, of fine form, and produced in tolerably full trusses, the colour being a rich scarlet with small white eye. It is a fine zonal scarlet.

4. *General Outram*.

A variety of medium vigour, and of a spreading habit of growth. The leaves are dark-zoned, and the flowers, which are borne in large bold trusses, are of a rich deep scarlet, the individual pips being of free shape and quality.

§ 2. Rosy-Crimsons or Cerises.

5. *Caxton* (Pearson).

A variety of moderately dense habit and of even growth. The leaves are green without zones. The flowers are moderate-sized, in rather small but dense trusses, and are of an intense rosy-crimson and very effective.

6. *Col. Wright* (Pearson).

A fine, close-habited, and very showy variety, of medium vigour of growth. The leaves are green, not zoned. The flowers, which are freely produced in large trusses, are of a light rosy-scarlet, and very showy. The flower-trusses are abundant, and hence very effective, as well as from being whole-coloured, which gives them a density and solidity which is absent from shaded flowers.

7. *Mark Twain* (F. Miles).

A dwarf-growing variety of spreading but compact habit, and a free bloomer. The leaves have a dark zone, and the flowers are large, in large trusses, and of a deep opaque scarlet. The individual pips are fine, and hence the variety is an effective one.

8. *Mrs. J. George* (W. Paul).

A variety of dwarf and moderately vigorous habit. The leaves have a broad faint zone. The flowers are produced in remarkably fine trusses, and are individually of good size and possess form as well as quality, the colour being a pale scarlet.

§ 3. Pinks.

9. *Lady Emily* (Pearson).

A dwarf-growing vigorous variety of spreading habit, with pale green leaves. The flowers are of a bright deep pink, white at the base of the upper petals, the pips being large, and the trusses fine.

10. *Lucy* (Pearson).

A variety of tolerably compact habit, and a free bloomer. The flowers are of a fine rose-pink, and are borne in medium-sized trusses.

11. *Mrs. Augusta Miles* (Pearson).

A compact-growing variety of moderate vigour, with green leaves of medium size. The flowers are borne profusely in trusses of moderate size, of a deep bright pink with white eye, which makes them very attractive.

12. *Mrs. Holden* (Pearson).

A variety of compact even growth, producing its medium-sized

trusses of blossom in profusion. The flowers are of a bright pink colour and remarkably showy.

§ 4. Bronze Zonals.

13. *Rev. C. P. Peach* (Laing).

A showy variety of dense compact even growth, with large leaves of a greenish yellow colour, marked by a broad deep copper-coloured zone. Flowers light scarlet.

14. *W. E. Gumbleton* (Laing).

A variety of compact growth. The leaves greenish yellow, with a broad zone of a dark bronze colour, and a narrow yellow-green border. Flowers scarlet.

§ 5. Gold-leaved.

15. *Golden Harry Hieover* (E. G. Henderson & Son).

A variety of dwarf, spreading, free-growing habit. The leaves are golden green, with a narrow vandyked zone of dark bronze and broad golden edge, very showy. Flowers scarlet. A very desirable variety.

§ 6. Ivy-leaved.

16. *Gem of the Season* (S. Ford).

A variety of free rambling growth, with green Ivy-like leaves, and abundant flowers of large size and a pale rosy-pink colour. The flowers are very freely produced, but do not stand well; it will nevertheless be useful for baskets.

17. *Argus* (G. Smith).

A variety of moderately free growth, with green Ivy-like leaves slightly marked with brown. The flowers are of a deep rosy-pink with dark spots on the upper petals, and are of a tolerably good shape.

It is proposed, amongst the other trials of 1876, to grow all the Ivy-leaved varieties obtainable, and which are now rather numerous, as pot plants, since they are an extremely interesting group, and are more useful under glass than in the flower borders.

XL. Report on Potatoes grown at Chiswick in 1875 under the direction of the Fruit and Vegetable Committee.

THE trial of the past season was limited in extent, being confined to the newer varieties and those not previously proved or described by the Society. A good many of the older varieties were grown alongside for comparison.

They were planted early in March in the usual manner, the Kidney varieties being planted whole, and the larger of the Round ones being cut. They grew well during the entire season, but the great dryness induced many varieties to continue growing late instead of ripening, and to supertuberate. There was scarcely a trace of disease seen whilst they were growing, but shortly after storing many varieties were badly attacked, about one-half of the whole being found diseased, some varieties, as usual, being quite free.

The following is a list of donors of Potatoes for trial :—Amies, W. S., Islington; Carter & Co., High Holborn; Cattell, J., Westerham; Cox, J., Redleaf, Kent; Dancer, F. N., Little Sutton, Chiswick; Donaldson, J., Keithhall, Inverury; Farquhar, R., Fyvie Castle, Aberdeen; Fenn, R., The Rectory, Woodstock; Froud, J. J., Stretton Bury, Leominster; Hardy, H. J. H., Bures, Essex; Harrison & Sons, Leicester; Hewson, Wm., The Nursery, Redhill, Surrey; Kopsel, A., Cöthen, Germany; Lye, J., Clyffe Hall, Market Lavington; Lyford, J., Lamport Hall, Northampton; Marshall, Wm., Uckfield; Morris, E., The Fern Park, Almondsbury; Minier, Nash, & Nash, 60, Strand; Miller, G., Dalkeith; Porter, W., Old-Meldrum, N.B.; Styles, W. Goodrich, Ross, Herefordshire. Stone, J., 7, Wickham Road, Lewisham Road, S.E.; Tanton, R., Epsom; Tantum, W., Fenagh House, Ireland; Turner, C., Slough; Veitch & Sons, Chelsea; Vilmorin et Cie, Paris.

Series 1. SKIN WHITE OR STRAW-COLOURED.

§ 1. Long or Kidney-shaped.

1. *Cavendish Kidney* (Dancer).

This is the same as the true Ashleaf Kidney. For description see Report of 1873.

2. *Parish Clerk* (Fenn).

A fine early garden variety of the Kentish Ashleaf type.

3. *Eliza Mary* (Fenn).

Of slender growth; tuber small and flattish. A very early variety for frame or early border.

4. *Mayor of Woodstock* (Fenn).

Haulm moderately strong; of the Ashleaf type. Tuber of medium size; fine even form. Of early and excellent quality.

5. *Bob-o-Day* (Fenn).

A very early and fine form of Ashleaf, suitable for early border or frame culture.

6. *W. F. Radclyffe* (Fenn).

Of strong growth (Ashleaf type). Tuber of medium size, a short kidney. Very early and of fine quality.

7. *Peter Barr* (Fenn).

A slender-growing, short kidney, very early. For frame or early border culture.

8. *Lamport Kidney* (Lyford).

A very fine form of the Kentish Ashleaf. See Report, 1873.

9. *Minier's Perfection* (Minier).

Haulm of fine free growth, about 18 inches high; foliage broad, pale green. Flowers pale, pinkish. Tuber long, slender, tapering, kidney-shaped, of even, regular form; eyes few, mostly situate on the crown; skin a little rough, very pale straw; flesh white, firm, and of good quality. A great cropper. Early. A very distinct sort.

10. *St. Hélène* (Vilmorin).

Haulm like the Ashleaf. Tubers of medium size, of very fine, even form; eyes nearly level with the surface; skin smooth, pale straw; flesh pale. A good cropper. Fine quality. A very fine early Potato.

11. *Potato the First* (Vilmorin).

Haulm resembling the Kentish Ashleaf. Tubers long and slender, kidney-shaped; skin rough, pale straw. An early sort and a good cropper, but too small.

12. *Premier* (Tanton).

This is the same as the Lapstone.

13. *Keystone Kidney*.

Haulm moderately robust, 2 feet 6 inches in length; stem pale green; leaves large, broad, pale green. Flowers lilac. Tuber medium size, of long tapering form, with a broad flattened crown, where the eyes are mostly situate; skin smooth; flesh yellow, rather close. Second early. A good cropper.

14. *Lyford's Conqueror* (Lyford).

Haulm moderately robust, from 2 to 3 feet long, in appearance like the Regent's. Flowers dark purple, berry-bearing. Tuber of medium size, long, kidney-shape, but irregular; eyes numerous, on raised knobs; skin smooth; flesh pale yellow, like the Lapstone. Second early.

15. *Prince Arthur* (Veitch).

Haulm robust, erect, from $2\frac{1}{2}$ to 3 feet high; stem slightly coloured; leaves dark green. Flowers produced freely, pale pinkish. Tuber of medium size, long, flattish kidney-shaped, but somewhat irregular; eyes large, wide; skin pale straw, a little rough; flesh pale, firm, solid. A second early. Quality excellent. *First-class Certificate*.

§ 2. Half-long.

16. *Alpha*.

This is now the adopted name given to Dwarf White (Bliss & Son). It is the earliest of Potatoes. For description see Report 1874.

17. *Cottar's Helpmate* (Fenn).

Haulm of moderate growth. Tubers medium size, half-long, rounded, the end blunt; eyes rather sunken at the crown and on raised knobs; skin pale straw, a little rough; flesh white, solid, and of fair quality. Second early.

18. *Seedling* (Moriss).

Haulm robust, growing about 18 inches in height; stem pale green; leaves broad, pale, greatly resembling the Ashleaf. Tubers of medium size, half-long, flattened; eyes small, rather sunken at

the crown ; skin rough netted, straw-coloured ; flesh white, firm and solid, of fine quality.

19. *Breadfruit* (Carter).

This is a good selection of Bressée's Prolific. For description see Report 1873.

20. *Rough Skin White Rose* (Kopel).

This was a selection from the American Rose, and is the same as Bressée's Prolific, one of the best of the American Potatoes.

21. *Wyville Seedling* (Dell).

This, in habit of growth, &c., has a strong resemblance to Bressée's Prolific or Snowflake, but is more robust. Tubers large, long, flattened, yet frequently rounded, very handsome in shape and form ; eyes small, almost level with the surface ; skin pale straw, rough, greatly resembling Snowflake ; flesh white, floury, and of excellent quality. Second early. Excellent. A supposed cross between the Regent and Lapstone Kidney.

22. *Lampport Perfection*.

Same as Victoria.

23. *Lampport Gem*.

Very similar to Victoria, but inferior.

24. *Seedling* (Styles).

Very similar to Victoria. Tubers smooth. Flowers white.

25. *Seedling* (Henson).

Similar to Paterson's Victoria, but is stated to keep better. For description see Report 1873.

§ 3. Round.

26. *Schoolmaster* (Turner).

Haulm of free compact vigorous growth, height from 2 to 2½ feet ; stem pale green ; leaves large, broad, pale green, greatly resembling some of the American varieties. Tubers large, round, of even and regular form, and even surface ; eyes small, almost level with surface ; skin pale straw, very rough like a good Regent ;

flesh white, solid, of fine floury character when cooked. A most abundant cropper. Second early. Raised by Mr. Bennett. A first-class Potato. It was awarded a *First-class Certificate*.

27. *Excelsior* (Porter).

Haulm of moderate growth, growing about 2 feet high; stem pale green; leaves medium pale. Tubers medium sized, roundish, flattened, of very even form, very handsome; eyes few and small; skin pale straw, a little rough; flesh pale, somewhat waxy. Second early. A very handsome Potato, and a selection from Early Handsworth.

28. *Kilgour's Early*.

A good selection of Regent.

29. *Annat Potato* (Miller).

A well-selected stock of Regents.

30. *Pink-eyed Buff* (Lye).

Haulm gross, growing about 2½ feet long; leaves small and much crumpled, of very distinct appearance. Tubers round, of fine regular form; eyes full, small, of a deep pink colour; skin rough, pale straw; flesh firm, pale, and of good quality. A very handsome Potato. Keeps late.

Series II. SKIN RED.

§ 1. Long or Kidney-shaped.

31. *Lamport Rose* (Lyford).

Haulm somewhat slender, spreading; stem pale tinged with red, height from 2 to 3 feet; leaves small. Tubers of medium size, of long true kidney-shape, finely formed; eyes very shallow; skin rough, pale straw, and pinkish-red at the crown; flesh yellow. A fine showy and distinct sort.

32. *Pink Gem* (Lyford).

Haulm of strong robust growth, growing to about 2 feet in length; leaves broad pale green. Tubers long, cylindrical, and somewhat tapering, covered with large deep sunken eyes; skin rough, dull red; flesh white, firm. A very coarse-looking Potato. Keeps late.

33. *Hardy's Glory* (Hardy).

Similar to *American Rose*.

§ 2. Round.

34. *Red Regent* (Amies).

Similar in all respects to the common white Regent, except in having the skin red. The flesh is white.

35. *Potato* (J. Cox).

This resembles the Red Regent, but the flesh is yellow and much inferior in quality.

36. *Potato* (Mrs. Marshall).

The same as Rufus. See Report 1874. Haulm of very robust growth; flesh yellow. Inferior.

37. *Seedling* (Tantum).

Haulm of moderate growth, erect, about 2 feet long, similar to Paterson's Victoria. Tubers large and coarse, roundish, flattened, and very irregular; eyes very deeply sunken; skin smooth, of a pale pink colour, deeper round the eye; flesh pale yellow, close. A late and very coarse Potato.

38. *Lampport Pink Flourball*.

Same as the Red Flourball.

Series III. SKIN PURPLE OR BLUE.

§ 1. Long or Kidney-shaped.

39. *Lyford's Black Hero*.

Haulm of medium growth; stem purplish, about 2½ feet long; leaves pale green. Flowers purplish. Tubers long, of round, cylindrical shape, covered all over with deep sunken eyes; skin rough, deep purplish; flesh white, very firm and solid. Quality good.

§ 2. Round.

40. *Round Blue* (Lye).

Haulm of moderate vigour. Flowers bright purple. Tubers rather small, perfectly round like a ball; eyes very small; skin

exceedingly rough, of a dark purplish red; flesh yellow, very hard and firm. A very distinct pretty sort, but too small.

41. *Seedling* (Froud).

Haulm long, straggling, from 3 to 4 feet long; leaves very small, dark green. Flowers rosy purple. Tubers of medium size, round, flattened; eyes deep; skin smooth, dark reddish purple, some tubers having splashes of white round the eyes; flesh white. A late sort and distinct.

XLI.—Report on Autumn-sown Onions Grown at Chiswick for Trial by the Fruit Committee of the Royal Horticultural Society. 1876.

IN 1875, when the general trial of Onions was resolved upon, it was deemed desirable that the entire collection should be submitted to two separate trials of spring-sowing and autumn-sowing.

A report has been published on those varieties which have succeeded well as spring-sown, the present report is supplementary to it, the varieties being autumn-sown.

It was proved last year that many varieties of Onions were entirely unsuited for cultivation, and worthless as spring-sown—to wit, the Lisbon, most of the Silver-skinned section (except for pickling purposes), and the Tripoli or Italian varieties, which seldom ripen. It may now be noted that all those varieties which succeed well as spring-sown, viz., the White Spanish, White Globe, Brown Globe, Yellow Danvers, the Red varieties, &c., are all equally good as autumn-sown. All Onions are all equally hardy and able to withstand the winter, and about the same proportion of each variety runs to seed.

The Silver-skinned varieties are especially valuable for autumn-sowing because of their early bulbing properties for spring salading, and the Tripoli or Italian section, through having a longer season, grow larger and ripen more perfectly.

1. *Queen*.

Synonym.—Piccirillo's New Queen.

This is a very small and very early variety of the Silver-skinned section. It forms bulbs almost as quickly as a Radish, is of about

the same size, and has rarely more than two or three leaves. The bulbs are roundish, very firm and solid, and keep well; the skin thin, silvery white. This is the same as the Nocera as introduced from Italy about thirty years ago, and the Florence White of earlier dates; very liable to deterioration. A very valuable variety for sowing thickly in autumn for early salading or pickling.
First-class Certificate.

2. *Early White Naples.*

Synonyms.—White Extra-early Nocera (Vilmorin); Early Nocera; New Queen (of some); Neapolitan Marzajola (of some).

This is a large form of the Queen, with the same general characteristics, and the one most generally to be met with. It is very excellent for sowing in autumn for spring salading, forming nice little bulbs very early.

3. *Paris Silver-skin.*

Synonyms.—Nocera Early White (Nutting); White Early Silver-skinned Pickling (Vilmorin).

This is very similar to Early White Naples, but does not form bulbs so early. The bulbs when fully grown are from 7 to 8 inches in circumference, roundish, white.

4. *Silver-skin (Nutting).*

Synonyms.—White Round Early Hard Dutch; Silver-skin (Veitch); Early White Silver-skin (Benary).

This cannot be distinguished from the Paris Silver-skin, excepting that the larger bulbs ripen well and keep sound for a greater part of the winter. It is useful where White Onions are preferred. The great use of all these Silver-skinned Onions is for pickling purposes.

5. *Lisbon.*

This variety, sown in spring, seldom forms any bulbs but grows late. Sown in autumn, it is in all respects merely a bad stock of the Silver-skin.

6. *Giant White Tripoli.*

Synonyms.—Tripoli White Italian (Barr); Large Early Italian Tripoli (Sutton); Early White Tripoli of France; Tripoli New Early White (Carter); Piccirillo's Marzajola; Large Late White Italian; Early Marzajola; Neapolitan White Marzajola (Carter); White Italian Tripoli.

Plant of strong robust growth; bulbs large or above medium size, roundish, flattened, with an irregular base, 11 to 12 inches in circumference, 2 inches deep. The skin is silvery white, flesh greenish white, the coatings thick and fleshy and somewhat soft. A fine variety for early autumn use, but soon begins to decay after ripening.

7. *Globe Tripoli.*

Synonyms.—Giant Late Red Italian; Large Early Red Italian Tripoli; Red Italian Tripoli of Naples; Naples Giant Red Tripoli; Large Round Giant Madeira; Madeira Largest Globe; Tripoli Red Mammoth.

Plant of strong robust growth; bulb very large, roundish, globular, with a thick neck, from 14 to 18 inches in circumference and 3 to 4 inches in depth. The skin is of a dull reddish brown, and peels off freely, the coating purplish red, thick, with white flesh, soft, mild, and excellent quality. An excellent Onion for autumn-sowing, and good for autumn and early-winter use. Not a good keeper.

8. *Large Red Round Sallon.*

Bulb very large like the Globe Tripoli, but having a darker and more reddish skin and of a somewhat firmer texture.

9. *Naples Giant Rocca.*

Synonym.—Giant Rocca.

Plant of strong robust growth; bulb large, roundish, and regular, with a fine neck, from 14 to 18 inches in circumference. The skin yellowish brown, almost like the Brown Globe, and peels off cleanly, the coatings purplish red, the flesh thick, white, soft, of mild and excellent quality. This resembles the Globe Tripoli, but is of a finer habit and of a paler colour. The bulbs also ripen better and keep well. A desirable sort.

10. *Flat Tripoli.*

Synonyms.—Madeira Largest Flat; Flat Madeira Tripoli; Red Flat Genoa.

Plant of gross growth; bulb large, roundish, flattened, with a thick neck, from 14 to 18 inches in circumference and $2\frac{1}{2}$ to 3 inches deep. Skin brownish red, flesh reddish, thick, soft, of mild and excellent quality. Soon begins to decay after storing. This

is simply a more flattened form of the Globe Tripoli, the two varieties often being mixed.

11. *Red Italian Tripoli of Genoa.*

Synonyms.—Large Red Flat Italian; Flat Italian Tripoli; Red Italian Tripoli of France.

This variety is very similar to the Flat Tripoli, the skin of a much darker red colour, the bulb firmer, and keeps better.

12. *Trebons.*

Plant of free growth but somewhat tender, succeeding best in a warm season. Neck somewhat coarse. The bulbs are of very large size, about 15 inches in circumference, and from 3 to 3½ inches in depth. The shape is obovate, the base somewhat broad and flat, whilst the top tapers more to the stalk or neck. The skin is pale straw, and peels off readily, like that of the White Spanish. The flesh is pale and rather soft, but of mild and excellent quality. This is *par excellence* the finest and most beautiful variety for autumn-sowing. The bulbs attain a large size early, ripen off well, and keep in good condition until after Christmas. Bears a close resemblance to the imported Spanish Onions. *First-class Certificate.*

XLII.—Report on Cauliflowers Grown for Trial at Chiswick. By the Fruit Committee of the Royal Horticultural Society. 1876.

THE seed for the purposes of this trial was presented by Messrs. Barr & Sugden; Benary; Carter & Co.; Dean; Harrison & Sons; Minier & Co.; Stuart & Mein; Radclyffe & Co.; Vilmorin & Cie.; Veitch; Wheeler & Sons.

They were sown about the middle of September, wintered in cold frames, and planted out early in March. The first heads of Early Erfurt were fit to cut on the 20th of June. The season was somewhat hot and dry in general, but sufficient good examples were secured to determine their characters.

A second sowing of all the varieties was made in March, but the

great heat rendered this a failure, excepting in regard to the late autumn varieties.

In all 93 samples were sown, representing 31 reputed distinct varieties, which the Committee have reduced to the following:—

1. *Extra Earliest Paris.*

This is the earliest variety, but of little value otherwise. It is useful for growing in frames, for a very early supply, where it produces small white heads of good quality. Grown in the open ground the heads attain a fair size, but have a frothy appearance, and are of little use.

2. *Erfurt.*

Synonyms.—Dwarf Early Erfurt; Dean's Early Snowball; Erfurt Dwarf Mammoth; Erfurt Dwarf; Frogmore Forcing; Dwarf Mammoth; Italian Early Giant Autumnal.

Plant of dwarf compact growth, with scarcely any stems; leaves of a pale glaucous green, short, broad, flat, rounded, with even edges; heads exposed, from 4 to 6 inches in diameter, roundish or somewhat flattened, very close, solid, and of a pure white colour, changing as they open to a purplish tinge. A very excellent variety, producing large heads very early, and in a small space, suitable for the earliest supply, or for sowing late in spring for early autumn use.

3. *Erfurt, very Dwarf, First Quality.*

This is purely a very fine selection of the Erfurt, a little earlier and smaller.

4. *Large Erfurt.*

A large and somewhat later form of the Erfurt.

5. *Early London.*

Synonyms.—Half Early White French; Early Dutch; First Quality Early.

Plant of medium somewhat spreading growth; leaves from 18 to 24 inches long, somewhat pointed and cockled, of a pale glaucous green colour; heads slightly protected, from 4 to 6 inches in diameter, slightly conical in form, and surface uneven, very close and solid, of a pale creamy-white colour. This is from three to four days later than the Erfurt, the plant of larger, stronger growth, and the heads of coarser grain. A very excellent sort for general use.

6. *Half Early Paris.*

Synonyms.—Half Early Lemaitre ; Covent Garden Early London (of some).

Plant of a dwarf sturdy appearance ; leaves about 20 inches in length, spreading, much cockled, and uneven, divided at the base, of a dark green colour ; heads exposed, from 4 to 6 inches in diameter, flat, coarse-grained, and uneven, of a pale sulphur colour. Fit for use the same time as the Early London, but much inferior to that variety.

7. *Late Paris.*

A later form of Half Early Paris, coarse and inferior.

8. *Walcheren.*

Synonyms.—Stadtholder ; Knickerbocker ; Autumn Giant ; Late Asiatic ; Large Late ; Hertfordshire Dwarf.

Plant of medium growth, similar in habit and appearance to Early London ; leaves long, pale glaucous green ; heads large, 4 to 8 inches in diameter, generally well protected ; the young leaves forming a sort of twist over them, roundish in shape, the surface uneven, the grains very close, firm, and solid, of a creamy-white colour. Sown at the same time this comes into use about a week later than the Erfurt. It is excellent for sowing in spring for autumn use.

9. *Lenormand's.*

Synonyms.—Lenormand's Extra Large ; Lenormand's Short Stem.

Plant of dwarf habit ; stem very short ; leaves long, large, broad, somewhat pointed, of a bright fresh green colour, very distinct ; heads large, from 4 to 8 inches in diameter, slightly protected, rounded in form, even surface, very firm, close, and solid, of a very clear creamy-white colour. A very excellent variety, with an exceedingly clear, fresh appearance, and withstands the dry weather well, succeeds the Walcheren a few days, fine for summer use. Some stocks of this are very inferior.

10. *Veitch's Autumn.*

Synonyms.—Algiers ; Late Giant Frankfort.

Plant large, of strong robust growth ; leaves long, of somewhat erect growth, of a deep green colour, with a heavy bluish bloom ; heads very large, but slightly protected, almost globular in shape

from 9 to 12 inches in diameter, very firm and solid, of a creamy-white colour. A large and splendid Cauliflower, comes into use in the months of September, October, and November, requires to be sown in spring. Is valueless as a summer sort.

11. *Veitch's Late.*

This is a later form of Veitch's Autumn Giant.

XLIII.—Report on Some of the Newer Varieties of Zonal Pelargoniums, Grown in Pots under Glass for Trial by the Floral Committee of the Royal Horticultural Society at Chiswick. 1876.

MANY of the newer varieties of the Pelargonium being better adapted for growing under glass than in the open ground, it was decided by the Committee to try all the newly-received varieties in pots the first season, and if worthy, to try them in the open ground as bedding varieties the succeeding year.

The splendid collection of Zonal Pelargoniums, which formed so conspicuous and instructive a feature in the houses during the the summer and autumn months, was due in great measure to the numerous new varieties contributed by the Continental as well as English raisers in response to the invitation of the Pelargonium Society.

The novelties were grown side by side and in conjunction with the most approved of the older sorts, for the sake of comparing and testing their qualities.

The large and interesting collection of the new class of Double varieties was due principally to the contributions of Continental raisers, from whom this useful form of decorative plant may be said to have emanated.

The collection, comprising about 200 named sorts, was received from Dr. Denny; Messrs. Carter & Co.; Cocker & Son; Dickson & Co.; Dodds; King; Lemoine; Laing; Pearson; Paul; Rollison & Sons; Rawson; Smith; Turner; Tipping; Veitch & Sons; Webb; Wells.

They were mostly grown in nine-inch pots, commenced to flower in the beginning of July, and continued to flower successionally to the end of October, and later, a period of over four months. No trial could have been more satisfactory; the plants grew well and flowered profusely, so that ample opportunity was allowed of comparing and testing their respective merits.

As pot plants for the decoration of the conservatory during the late autumn months, there is no plant so valuable as the Zonal Pelargonium. The varieties brought out during the past season are in decided advance of former years' productions.

The classification adopted is according to the colour of the flowers, and is as follows:—

- | | |
|---|------------------------|
| 1. Scarlet. | 10. Magenta. |
| 2. Scarlet with white eye. | 11. Cerise. |
| 3. Pale orange-scarlet. | 12. Rosy-cerise. |
| 4. Scarlet shaded magenta,
with white eye. | 13. Rose-pink. |
| 5. Magenta-scarlet. | 14. Magenta-rose. |
| 6. Rosy-scarlet. | 15. Pale magenta-pink. |
| 7. Crimson-scarlet. | 16. Light salmon. |
| 8. Crimson-scarlet shaded
with magenta. | 17. Mottled salmon. |
| 9. Light magenta. | 18. Dark salmon. |
| | 19. Oculate. |
| | 20. White. |

The varieties certificated are marked with three asterisks thus:—

A selected list is given of the varieties most suitable for pot culture. The numbers refer to the number in the Report.

The raisers' names are given in brackets where known.

I. *Flowers Scarlet.*

1. *Sir John Moore* (Denny). Plant of loose spreading habit; free flowering; trusses medium sized; flowers of fine form, medium-sized, bright scarlet.
2. *Moxham* (Denny). Plant of tall, straggling habit; shy flowering; trusses medium sized; flowers large, of fine form, bright scarlet.
3. *John West* *** (Pearson). Plant of fine dwarf habit; leaves zonate; very free flowering; trusses large, well displayed;

flowers large and of fine form, bright scarlet. A very showy variety.

4. *Pirate*. Plant of tall, vigorous growth; free flowering; trusses large; flowers large, the petals reflexed, bright scarlet.
5. *Chancellor* (George). Plant of fine dwarf habit; leaves plain green; free flowering; trusses small; flowers large and of fine form, bright scarlet.
6. *The Spencer*. Plant of vigorous growth; leaves zonate; very free flowering; trusses large; flowers large, bright scarlet.
7. *Tom Taylor* (King). Plant of fine compact habit; leaves zonate; very free flowering; trusses small; flowers large, of fine form, bright scarlet.
8. *A. Henderson*. Plant of tall-growing, vigorous habit; leaves plain green; very free flowering; trusses large and full; flowers large, bright scarlet. A semi-nosegay variety.
9. *Shakespeare* (Denny). Plant of spreading habit; leaves zonate; very free flowering; trusses medium sized; flowers large and of good form, bright scarlet.
10. *Æneas* (Denny). Plant of dwarf compact habit; free flowering; trusses medium sized; flowers large and of fine form, bright scarlet. A very showy variety.
11. *Ophelia* (Denny). In the way of *Moxham*, but free flowering.
12. *Verona* (Denny). Plant of tall-growing habit; leaves zonate; very free flowering; truss large; flowers large, with very small white eye, bright scarlet.
13. *Lancelot* (Denny). Very similar to *Verona*.

II. *Flowers Scarlet with White Eye.*

14. *A. F. Barron* *** (George). Plant of dwarf compact habit; leaves slightly zonate; very free flowering; trusses large; flowers large, of splendid form, bright scarlet, with a very distinct white eye, rendering it very effective.
15. *Excelsior* (Denny) ***. Plant of fine dwarf habit; leaves zonate; very free flowering; trusses large; flowers large, of good form, bright scarlet, with distinct white eye. Good.
16. *Astarte* (Denny). }
17. *Cenone* (Denny). } All very similar to *Excelsior*.
18. *Eros* (Denny). }
19. *The General* (Paul). Plant of tall, vigorous growth; leaves zonate; free flowering; trusses medium sized; flowers

medium sized, of good form, bright scarlet, with large white eye.

20. *Achilles* (Postans). Plant of fine dwarf habit; leaves dark green, with distinct zone; very free flowering; trusses medium sized; flowers medium sized, bright scarlet, with distinct white eye.
21. *De Lesseps*. Very similar to *Achilles*, but having a darker-zoned leaf.
22. *Louis Blanc*. Plant of tall, vigorous growth; free flowering; leaves zonate; trusses large and full; flowers large, of fine round form, bright scarlet, with white eye.
23. *Mrs. Whiteley* (Pearson). Plant of fine dwarf habit, free flowering; leaves zonate; trusses medium sized; flowers very large, of fine form, bright scarlet, with white eye.
24. *Rosa Little* (Little). Plant of tall, vigorous habit; leaves zonate; free flowering; trusses medium sized; flowers large, of good form, with very small white eye.

III. *Flowers Pure Orange-Scarlet.*

25. *John Gibbons* (Pearson). Plant of tall-growing, vigorous habit; leaves plain green; very free flowering; trusses very large; flowers large, of fine form, bright orange-scarlet.
26. *Malcolm* (George). Similar to *John Gibbons*, but with the petals narrower.
27. *Brutus* (Pearson). Similar to *Malcom*.
28. *Inspector Coqueron*. An inferior variety.
29. *Mark Twain* (Miles). Plant of vigorous growth; foliage dark green, zonate; free flowering; trusses large; flowers large, orange-scarlet, of the nosegay section.
30. *Drapeau Français*. Plant of tall, strong growth; leaves zonate; free flowering; trusses very large; loose flowers large, petals narrow, orange-scarlet, of the nosegay section.
31. *Wilhelm Pfitzer*. Similar to *Mark Twain*, having smaller pips, and flowers not so well formed. Belongs to the nosegay section.

IV. *Orange-Scarlet, Magenta-shaded, White Eye.*

32. *Earl Manvers* (Pearson). Plant of fine dwarf compact habit;

leaves plain green; very free flowering; trusses large, well displayed; flowers large, of fine form, petals somewhat reflexed, orange-scarlet shaded with magenta, distinct white eye.

33. *Mrs. Leacroft* (Pearson). Plant of dwarf habit; leaves plain green; free flowering; trusses small; flowers rather small, pale orange-scarlet shaded with magenta, white eye.
34. *Diana* (Denny). Similar to *Mrs. Leacroft*.
35. *Dr. Koch*. Like *Mrs. Leacroft*. Leaves zonate.
36. *Laura* (Pearson). Like *Diana*. Leaves zonate.

V. *Flowers Magenta-Scarlet.*

37. *Alonzo* (Denny). Plant of good habit; free flowering; trusses rather thin; flowers large; broad, of fine form; lower petals magenta-scarlet, with a shade of plum colour; upper petals shading to crimson, with large white eye. The flowers of this variety improve as the season advances. A splendid variety.
38. *Mary Pearson* *** (Pearson). Plant of dwarf-spreading habit; leaves zonate; very free flowering; trusses large, well thrown above the foliage; flowers large, clear white throat, nearly round, petals broad, nearly uniform magenta-scarlet. A splendid flower.
39. *Captain Holden* (Pearson). Like *Mary Pearson*, but having more of the magenta shade; fine truss.
40. *Louisa Smith* (Pearson). Fully more rosy coloured than *Mary Pearson*.
41. *Mrs. Huish* *** (Pearson). Plant of free good habit; leaves plain green; very free flowering; trusses large, well displayed; flowers medium sized, the petals narrow, of a nearly uniform magenta-scarlet. A semi-nosegay variety.
42. *Minerva* (Denny). Plant of vigorous growth; leaves zonate; free flowering; trusses small, compact; flowers small, petals reflexed, of a nearly uniform magenta-scarlet.
43. *Crimson King*. A very inferior variety.
44. *John Fellowes* (Pearson). Spreading habit; flowers large, uniform magenta-scarlet; semi-nosegay.
45. *Mrs. W. Brown* (Pearson). Plant of vigorous free-spreading habit, and free flowering; trusses large, well displayed; flowers large, of fine regular form, petals broad, reflexed, the

- lower petals magenta with scarlet edging, the top petals scarlet; fine large white eye.
46. *Portia* (Denny). Flower of fine round form, uniform dark magenta-scarlet.
 47. *Hebe* (Denny). Similar to *Portia*.
 48. *Frederick William* (Pearson). Plant of very compact habit; leaves plain green; free flowering; trusses large, well displayed; flowers medium sized, dark magenta-scarlet.
 49. *Sheendale Nosegay* (Tipping). Plant of loose straggling habit; free flowering; trusses large; flowers large, the petals narrow, magenta-scarlet. A semi-nosegay variety.
 50. *Mrs. Turner* *** (Dickson & Co.). Plant of strong growth; leaves plain green; free flowering; trusses large, erect; flowers small, the petals narrow; uniform dark magenta-scarlet shade. A semi-nosegay variety.
 51. *Little Car* (Pearson). Smaller flower, but very like *Mrs. Turner*.
 52. *Athos* (Pearson). Like *Mrs. Turner*.
 53. *Caxton* (Pearson). Like *Mrs. Turner*.
 54. *The Moor* (George). Plant of somewhat loose habit; leaves very slightly zoned; free flowering; trusses large; flowers large, magenta-scarlet shaded with orange on top petals. A semi-nosegay variety.
 55. *Salathiel* *** (Denny). Plant of compact growth; free flowering; trusses large; flowers large, finely formed, magenta-scarlet.
 56. *Alsace* (Lemoine). Plant of vigorous growth; trusses large; flowers large, petals narrow, dark magenta-scarlet. A semi-nosegay variety.
 57. *John Watson* (Pearson). Plant of strong vigorous growth; leaves dark green, slightly zonate; free flowering; trusses large, well displayed; flowers large, the petals narrow, magenta-scarlet shaded with orange. A semi-nosegay.
 58. *Chancellor* (George). A strong growing variety; leaves plain green; free flowering; trusses large; flowers large, with small white eye, magenta-scarlet, top petals shaded with orange.
 59. *Othello* (Denny). An inferior variety.

VI. *Flowers Rosy-Scarlet.*

60. *Lord Zetland* *** (Pearson). Plant of compact bushy habit;

- leaves zonate; free flowering; trusses large, erect; flowers large, of fine form, rosy-scarlet. A very showy variety.
61. *Lady Stanhope* (Pearson). Plant of free compact growth; leaves slightly zoned; very free flowering; trusses large, well thrown above the foliage; flowers large, rosy-scarlet.
62. *Col. Wright* (Pearson). } These three very much resemble *Lord*
 63. *Rev. S. Hey* (Pearson). } *Zetland*, but are of rather stronger
 64. *Wordsworth* (Pearson). } growth.
65. *Pride of Kent*. Like *Lady Stanhope*, but as regards size and form of flower very inferior.
66. *Iago* (Denny). Plant of vigorous growth; leaves zonate; free flowering; trusses small; flowers large, of fine form, rosy-scarlet.
67. *Velocipede*. Inferior.
68. *Léon Mongeuot*. Inferior.

VII. *Flowers Crimson-Scarlet.*

69. *Charles Smith* *** (Pearson). Plant of free vigorous growth; leaves plain green; free flowering; trusses very large; flowers large, crimson-scarlet, petals short and broad, upper petals dashed with crimson. A splendid variety.
70. *David Thomson* (Pearson). Plant of free compact habit; leaves plain green; free flowering; trusses large; flowers large, of fine form, crimson-scarlet, white eye.
71. *Rev A. Atkinson* (Pearson). Plant of vigorous habit; free flowering; trusses very large, somewhat loose; flowers large, crimson-scarlet.
72. *Sir H. S. Stanhope* (Pearson). }
 73. *General Outram*. } Very similar to *Charles Smith*.
 74. *Wellington* (Denny). }
75. *A. Figneaux* (Lemoine). Plant of tall branching habit; free flowering; trusses very large; flowers medium sized, the petals narrow and crumpled, dark crimson-scarlet. Inferior. Belongs to the nosegay section.
76. *Col. Fewel* (Lemoine). Same as *A. Figneaux*.

VIII. *Flowers Crimson-Scarlet shaded with Magenta.*

77. *E. Davies* (Pearson). Plant of strong-growing free habit; leaves plain green; free flowering; trusses very large, well-

displayed; flowers large, petals narrow, crimson-scarlet, under petals shaded with magenta. Of the nosegay section.

78. *Jules Grolez*.
 79. *Enfant de Nancy* (Lemoine).
 80. *Délaqué de Paris* (Lemoine). } These are very similar to *E. Davies*.
 81. *Mulberry* (Pearson). Plant of vigorous growth; leaves plain green; free flowering; trusses very large, somewhat loose; flowers large, petals narrow, crimson-scarlet shaded with magenta. Of the nosegay section.

IX. *Flowers Light Magenta.*

82. *Mabel Eden* (Pearson). Plant of free-growing, spreading habit; free flowering; trusses large; flowers large, of fine form, the petals short and broad, of a nearly uniform rosy-magenta shade, the top petals shaded with crimson. Very distinct and showy.
 83. *Mrs. J. Paget* (Pearson). Plant of fine dwarf habit; leaves plain green; free flowering; trusses large, well thrown above the foliage; flowers medium sized, the petals long and somewhat loose, of a rosy-magenta shade.
 84. *John Fraser* (Cocker & Son). Plant of free-spreading habit; free flowering; trusses small; flowers small, the top petals short and small. Inferior to *Mabel Eden*.
 85. *Isolène*. In inferior variety.

X. *Flowers Magenta.*

86. *Lais* *** (Denny). Plant of fine dwarf habit; leaves slightly zoned; free flowering; trusses small, compact; flowers large, of fine form, the petals broad, of a fine clear rosy-magenta, the top petals having a dash of crimson.
 87. *Lesbia* (Denny). Very similar to *Lais*.
 88. *Thisbe* (Denny). In the way of *Lais*, having finely-formed round flowers, magenta suffused with a very pleasing and distinct tinge of violet. In the autumn becoming almost blue. Very pretty.
 89. *Mrs. Gregory* (Pearson). Plant of free good habit; leaves slightly zoned; free flowering; trusses large; flowers large, of a bright rosy-magenta shade, the top petals having a dash of crimson, clear white eye. A splendid showy variety.

90. *Evelyn Mellish* (Pearson). } Similar to *Mrs. Gregory*.
 91. *Mrs. Mellish* (Pearson). }
 92. *Ianthe* (Denny). Plant of dwarf compact habit; free flowering; trusses small; petals large, rosy-magenta, top petals dashed with crimson, distinct white eye.
 93. *Hetty* (Denny). Similar to *Ianthe*.
 94. *Imogene* (Denny). Plant of dwarf bushy habit; leaves slightly zoned; free flowering; trusses small; flowers large, the top petals shaded with crimson. A very pleasing shade of colour.
 95. *Zuleika* (Denny). Plant of fine dwarf compact habit; free flowering; trusses medium sized; flowers large, of fine form, light magenta.
 96. *Pytho* (Denny). In the way of *Ianthe* as regards colour of flower, but having a larger truss and larger individual flowers. Good.
 97. *Haridée* (Denny) }
 98. *Joseph Seeckmann*. } Inferior varieties.
 99. *Dr. Livingstone*. }

XI. *Flowers Cerise.*

100. *Mrs. Jacobi* (Pearson). Plant of very dwarf and compact growth; leaves zonate; trusses medium sized, well displayed; flowers large, of fine form, cerise. A fine variety.
 101. *Lady Middleton*. Like *Mrs. Jacobi*. Plant of stronger growth; leaves plain green.
 102. *Lady Selwyn* (Wells). Plant of tall vigorous habit; leaves zonate; trusses medium sized; flowers large, cerise.
 103. *John Riddell* (Cocker & Son). Like *Lady Selwyn*.
 104. *Claudius*. }
 105. *Circulator*. } These are inferior to those described.

XII. *Flowers Rosy-Cerise.*

106. *Mrs. J. George* (George). Plant of free-spreading habit; leaves zonate; free flowering; trusses large; flowers large, of fine form, rosy-cerise. A splendid variety.
 107. *Ivanhoe* (George). An improvement on *Mrs. J. George*, the flowers of larger and finer form; leaves zonate.
 108. *Génévère* (Denny). Resembling *Mrs. J. George*.

XIII. *Flowers Rose-Pink.*

109. *Rose of Allandale* *** (Denny). Plant of fine free habit; leaves zonate; very free flowering; trusses of medium size, well thrown above the foliage; flowers large, of fine form, the petals broad, bright rose-pink, upper petals distinctly marked with white. Very showy.
110. *Mrs. Rogers* *** (Pearson). Plant of fine compact habit; leaves plain green; free flowering; trusses small and compact, erect; flowers small, rose-pink, petals short and rather flimsy, with a distinct white blotch on upper petals.
111. *Lady Byron* (Pearson). Very similar to *Mrs. Rogers*.
112. *Surpasse Beauté de Suresnes*. Plant of tall vigorous habit; leaves zonate; trusses large; flowers large, rose-pink, upper petals distinctly blotched with white.
113. *Lucy Bosworth* (Pearson). Plant of fine compact bushy habit; leaves plain green; free flowering; trusses large; flowers large, rose-pink, of splendid form, the petals broad, with a conspicuous white mark on the upper petals. Good.
114. *Mrs. Holden* *** (Pearson). Plant of tall vigorous habit; leaves zonate; free flowering; trusses very large and close; flowers large, the petals long and narrow, deep rose, the upper petals distinctly blotched with white. Showy. Of the nose-gay class.
115. *Mrs. Kent*. Plant of vigorous growth; leaves plain green; free flowering; trusses very large; flowers large, the petals long and narrow, deep rose, top petals marked with white. Nosegay.
116. *Mrs. Lancaster* (Pearson). Plant of dwarf and compact habit; free flowering; trusses large, erect; flowers large, deep rose-pink. Nosegay.
117. *Audifret Pasquier* (Lemoine). } Inferior to those above de-
118. *Député Valentin* (Lemoine). } scribed.

XIV. *Flowers Magenta-Rose.*

119. *Lady Sheffield* *** (Pearson). Plant of free vigorous growth; leaves plain green; trusses very large; flowers large, of fine form, the petals broad, deep magenta-rose, with a shade of violet and a lacing of scarlet, giving the flower a most distinct and charming appearance, top petals distinctly marked with white. A splendid variety.

120. *Sibyl Holden* *** (Pearson). Plant of free growing habit; leaves plain green; free flowering; trusses medium sized; flowers large; petals large, broad, the lower ones reflexed, deep magenta-rose, with a very distinct shade of violet, the upper petals distinctly marked with white.
121. *Mrs. Turner* (Pearson). Plant of strong growth; free flowering; trusses very large; flowers of good form, the petals rather narrow, dark magenta-rose.
122. *Ethel* (Pearson).
 123. *Annie Orton* (Pearson). } All in the way of *Mrs. Turner*.
 124. *Mrs. T. F. Fenn*. }
125. *Florence Durand*. Plant of free-growing bushy habit; leaves plain green; trusses of medium size; flowers of medium size, deep magenta-rose. Showy, but now superseded.
126. *Louisa* (Pearson). Plant of compact bushy habit; leaves slightly zonate; free flowering; trusses of medium size; flowers medium sized, the petals broad, short, and somewhat reflexed, pale magenta-pink. A very distinct variety.
127. *Progrés Liberal* (Lemoine). Plant of strong, vigorous growth; leaves large, plain green; free flowering; trusses large and very close; flowers medium sized, the petals long and narrow, magenta-rose. Of the nosegay section.
128. *Flame*. } These two nosegays are inferior to those
 129. *Kate Nicholson*. } described.

XV. *Flowers Pale Magenta-Pink.*

130. *Déjazet* (Lemoine). A very inferior variety of the nosegay class.

XVI. *Flowers Light Salmon.*

131. *Miss Strachan* *** (Pearson). Plant of dwarf compact habit; leaves zonate; free flowering; trusses large; the flowers large, of fine form, the petals broad, pale salmon edge, becoming darker towards the eye. A splendid variety.
132. *Beauty of Suffolk* (Dodds). Smaller trusses and petals, but resembling *Miss Strachan* in other respects.
133. *Ulen* (Pearson). Like *Beauty of Suffolk*.

XVII. *Flowers Mottled Salmon.*

134. *Leopard* (Pearson). Plant of fine dwarf habit; leaves zonate; free flowering; trusses large; flowers large, rosy salmon, of

good form, the petals large and broad, distinctly streaked with white, somewhat varied. Very distinct and showy.

135. *Seraph* (Pearson). Plant of free vigorous habit; leaves zonate; free flowering; trusses of medium size; flowers medium sized, rosy-salmon, distinctly mottled with white. Showy.

XVIII. *Flowers Dark Salmon.*

136. *Vanessa* (Miles). Plant of dwarf good habit; leaves slightly zonate; free flowering; trusses large, well displayed; flowers large, of a uniform salmon colour. Of the nosegay group.
137. *M. Boucharlat* (Lemoine). Plant of tall spreading bad habit; shy flowering; trusses large, very loose, petals narrow, rosy-salmon. Belongs to the nosegays.
138. *A. K. McNab* (Laing). Plant of dwarf spreading habit; leaves zonate; free flowering; trusses large; flowers of medium size, of a uniform salmon-cerise colour. Showy and distinct. One of the nosegays.

XIX. *Flowers Oculate.*

139. *Evening Star* *** (Smith). Plant of very dwarf fine habit; leaves zonate, very dark green; very free flowering; the trusses small; the petals very large and fine, clear white, with a bright rosy eye. Very pretty.
140. *Lucretia* (George). Plant of dwarf good habit; leaves zonate; very free flowering; trusses of fair size; the petals large, pure white, shading to bright rose towards the eye. Very pretty.
141. *Notre-Dame de Beaumand* (Denny). Plant of straggling, loose habit; free flowering; trusses of medium size; the petals broad and large, white, faintly marked with rose throughout. A good flower.

XX. *Flowers White.*

142. *Snowdon* *** (Denny). Plant of fine compact, bushy habit; leaves zonate; very free flowering; trusses large; the petals large, of fine form, white with a faint shade of pink.
143. *Madame Edgar Guinet* (Lemoine). Plant of tall growth; leaves pale green, with faint zone; moderately free flowering; trusses large; flowers medium sized, very pure white. The purest white.

144. *Clémence Boutard*. Plant of strong, vigorous growth; leaves zonate; very free flowering; trusses small; flowers small, white shaded with pink throughout.

A SELECTION OF THE BEST VARIETIES IN THEIR RESPECTIVE CLASSES.

Scarlet.

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|-----------------|--|------------------|
| 3. John West. | | 7. Tom Taylor. |
| 6. The Spencer. | | 8. A. Henderson. |

Scarlet with White Eye.

- | | | |
|-------------------|--|--------------------|
| 14. A. F. Barron. | | 23. Mrs. Whiteley. |
| 15. Excelsior. | \| |  |

Pale Orange-Scarlet.

- | | | |
|-------------------|--|-----------------|
| 25. John Gibbons. | \| | 29. Mark Twain. |
|-------------------|--|-----------------|

Orange-Scarlet-Magenta, shaded White Eye.

- | | | |
|-------------------|--|--------------------|
| 32. Earl Manvers. | \| | 33. Mrs. Leacroft. |
|-------------------|--|--------------------|

Magenta-Scarlet.

- | | | |
|-------------------|--|--------------------|
| 38. Mary Pearson. | \| | 54. The Moor. |
| 37. Alonzo. | \| | 55. Salathiel. |
| 41. Mrs. Huish. | \| | 45. Mrs. W. Brown. |

Rosy-Scarlet.

- | | | |
|--------------------|--|-----------|
| 60. Lord Zetland. | \| | 66. Iago. |
| 61. Lady Stanhope. | \| |  |

Crimson-Scarlet.

- | | | |
|--------------------|--|--------------------|
| 69. Charles Smith. | | 70. David Thomson. |
|--------------------|--|--------------------|

Crimson-Scarlet shaded with Magenta.

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|----------------|--|---------------|
| 77. E. Davies. | | 81. Mulberry. |
|----------------|--|---------------|

Light Magenta.

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|-----------------|--|--------------------|
| 82. Mabel Eden. | | 83. Mrs. J. Paget. |
|-----------------|--|--------------------|

Magenta.

- | | | |
|-------------------|--|-------------|
| 86. Lais. | | 88. Thisbe. |
| 89. Mrs. Gregory. | | |

Cerise.

- | | | |
|------------------|--|-------------------|
| 100. Mrs. Jacoby | \| | 102. Lady Selwyn. |
|------------------|--|-------------------|

Rosy-Cerise.

107. Ivanhoe.

Rose-Pink.

- | | | |
|-------------------------|--|-------------------|
| 109. Rose of Allandale. | \| | 114. Mrs. Holden. |
| 110. Mrs. Rogers. | \| |  |

Magenta-Rose.

119. Lady Sheffield.	|	126. Louisa.
120. Sibyl Holden.	|	

Salmon.

131. Miss Strachan (light).		136. Vanessa (dark).
134. Leopard (mottled).		

Oculate.

139. Evening Star.		140. Lucretia.
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White.

142. Snowdon.		143. Madame Edgar Guinet.
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XLIV. Report on Ivy-leaved Pelargoniums Grown for Trial at Chiswick in 1876.

THE varieties forming the subject of this report were contributed by Messrs. Veitch & Sons; E. G. Henderson & Sons; S. Ford; J. Laing; Thomas Laxton; J. George; Dickson & Co.; B. S. Williams; and Jean Sisley.

The raisers' names are given in brackets where known.

They were all grown in pots under glass and subject to the same treatment.

*** denotes the varieties which received certificates.

They have been divided into two principal classes:—

Class I. *Leaves Peltate or Shield-shaped*, distinctly zonate, with a thick fleshy substance and of the form of those of the Ivy.

Class II. *Leaves not Peltate*, the stalk being set on as in the ordinary zonals, and possessing a sort of hybrid character between these and the Ivy-leaved sorts.

CLASS I. LEAVES PELTATE, DISTINCTLY ZONATE, WITH A THICK FLESHY SUBSTANCE, AND OF THE FORM OF THOSE OF THE IVY. (*Pelargonium lateripes*).

A. Leaves Green.

(1) *Flowers Lilac.*

1. *Lilacina* (Sisley). Plant of fine trailing habit, having very small trusses, and flowers of a pale lilac colour, somewhat shy flowering.

2. *Peltatum elegans* (Bull). Plant of free trailing habit, having a large truss of flowers of a pale purple; very free flowering. A useful decorative variety.
3. *König Albert* (Liebmann). Plant of half trailing habit, with rosy-lilac semi-double flowers; free flowering. A very useful decorative plant, good for bouquets.
4. *Fairy Bells*. Plant of free trailing growth, with pale lilac-coloured flowers; very free flowering.
5. *Captive* ***. Of free trailing growth, with large pale lilac-coloured flowers, having two dark conspicuous veins at the bottom of each upper petal; free flowering.
6. *Angelo*. The same as *Captive*.
7. *Princess Thyra* (Bull). Plant of very free trailing habit, with flowers of a pinkish-lilac shade; very free flowering.
8. *Pictum*. Plant of free trailing habit; flowers having very narrow petals, with pale lilac centre, tipped with a darker shade, and having conspicuous veins and marks on the upper petals; somewhat shy flowering.
9. *No. 4* (George). Plant of free trailing habit; flowers pale lilac, with bright purplish spots, and veins on upper petals; very free flowering.

2. *Flowers White shaded with Lilac.*

10. *Album grandiflorum*. Plant of very free trailing growth, having large white flowers shaded with lilac; free flowering.
11. *Innocence*. Very much in the way of *Album grandiflorum*, but having the flowers of a purer white.
12. *Ivy-leaved white*. Plant of free trailing habit, with large white flowers tinged with lilac; free flowering.
13. *Holly Wreath*. Of a free trailing habit, having medium-sized truss, and flowers of a pinkish white; free flowering.

B. *Leaves Variegated.*

14. *L'Élégante*. Plant of free trailing habit; leaves small, pale green, irregularly marked with white on outer edges, changing at times by exposure to a beautiful rosy-violet; flowers large, white.
15. *Silver Variegated*. Similar to *L'Élégante*, but having larger leaves, and of a more vigorous trailing habit.
16. *Silver Gem*. Plant of very close, slow-growing habit; leaves small, slightly cupped and unevenly marked with pale green and white; flowers lilac.

17. *Coccineum foliis variegatis*. Plant of free growing trailing habit; leaves medium sized with dark green edges, centre blotched with yellowish-green, and having a very distinct bronzy zone; flowers lilac.

CLASS II. LEAVES NOT PELTATE.

A. Leaves Green.

1. *Flowers Rose-coloured*.

18. *Willsii* *** (Wills). Plant of half-trailing habit; trusses of medium size; flowers of a bright rose colour; free flowering and very showy.
19. *Alice Lee*. Very similar to *Willsii*.
20. *Willsii rosea* (Wills). Resembling *Willsii*, but of stronger growth; the flowers large, of a bright rose colour, slightly tinged with magenta; free flowering. A very showy and useful decorative plant.
21. *Dolly Varden*. Plant of free trailing habit; flowers of a bright rose; free flowering.
22. *Argus*. Plant of very free growing trailing habit; foliage very dark green with a faint zone; flowers of a rosy-crimson colour; trusses large, very freely produced. A very bright and effective variety.
23. *Emperor*. Very similar to *Argus*.
24. *Coccineum*. Plant of free trailing habit; flowers crimson shaded with rose, with very narrow petals; free flowering.
25. *Pseudo-Zonale*. Very free growing trailing habit; flowers of a bright rose colour, with whitish eye and conspicuous veins on upper petals; very free flowering. A good and distinct variety.
26. *St. George* (George). Plant of strong vigorous growth; flowers medium-sized, with broad petals of a light rose colour; free flowering and good.
27. *Camballo* (George). Plant of fine free vigorous growth, having large very bright rose-coloured flowers of fine form, with large broad petals; free flowering.

2. *Flowers Pale Rose*.

28. *Duchess of Edinburgh* (George). Plant of free growing, trailing habit; flowers pale lilac, with streaks of rose and distinct rose

- markings; small truss of flowers with broad short petals; free flowering.
29. *Gem **** (George). Very similar to *Duchess of Edinburgh*, but having a far superior flower as regards form, although less in size. A very pretty variety.
30. *Progress* (George). Plant of fine free trailing habit; trusses large; flowers of fine form, pale rose, the upper petals streaked; very free flowering.
31. *Gem of the Season*. Plant of very free trailing habit; flowers of a pale rose colour, very freely produced. A very pretty variety.
32. *Miss Margaret*. Plant of half-trailing thick bushy habit; foliage during the winter of a distinctly variegated greenish yellow, but changing in the summer to a pale sickly green; flowers of a pale rose; somewhat shy flowering.

3. *Flowers Oculate.*

33. *Bridal Wreath ****. Plant of a bushy and half-trailing habit; flowers of fine form, the ground-colours pure white, with small pink eye; very free flowering. A very pretty variety.

4. *Flowers Crimson tinged with Purple.*

34. *Lady Edith*. Plant of stiff slow growth, with medium-sized leaves; flowers crimson tinged with purple; shy flowering.
35. *Favonius*. Similar to *Lady Edith*, the plant of freer growth and a more trailing habit.

B. *Leaves Variegated.*

36. *Duke of Edinburgh*. Plant of free trailing habit, with large leaves, the centre yellowish-green with white margin; flowers very small, pale rose, veined on upper petals.
37. *Variegatum*. The same as *Duke of Edinburgh*.

XLV. Report on the Double-Flowered Varieties of Zonal Pelargonium Grown for Trial by the Floral Committee of the Royal Horticultural Society at Chiswick.

THE collection, numbering some 160 names, was received from Messrs. Carter & Co.; Dickson & Co.; E. G. Henderson & Son; Paul & Son; Rollisson & Sons, Veitch & Sons; Alegatière; Cannell; Fraser; Laxton; Laing; Lemoine; Paul; Sisley; Smith; Turner; Williams.

They were grown in 9-inch pots and flowered under glass. A good bloom was secured on most of the varieties by the beginning of July, when they were inspected by the Committee, and again in September. The trial was in all respects a satisfactory one.

For easy identification they have been grouped into the following classes, according to the various shades of colour of the flowers:—

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|---------------------------------|-----------------------|
| 1. Scarlet. | 8. Magenta-Rose. |
| 2. Scarlet shaded with Magenta. | 6. Pale-Pink. |
| 3. Magenta-Scarlet. | 10. Very pale Salmon. |
| 4. Purplish-Scarlet. | 11. Pale Salmon. |
| 5. Orange-Scarlet. | 12. Salmon. |
| 6. Cerise. | 13. Oculate. |
| 7. Rose-Pink. | 14. White. |

And the *Pompon-flowered* of several coloured, which are so distinct in character as to form a separate group.

A subdivision of these classes has also been adopted, in regard to habit, flowering, &c., there being at least two very distinct classes, viz.:—

1. *Gross-habit* type, Madame Lemoine, of strong gross growth; the leaves large and broad; moderate flowering.

2. *Free-habit* type, ordinary zonal, of free medium growth, &c.; very free and continuous flowering, like the ordinary single zonal Pelargonium.

*** denotes the varieties which have received certificates.

The raisers' names are given in brackets where known.

I. Flowers Scarlet.

Free Habit.

Leaves Plain Green. Tom Thumb type.

1. *Vesta* *** (Laxton). Plant of dwarf compact habit; very free

flowering ; trusses medium sized ; flowers semi-double, bright scarlet. A very showy variety.

2. *Aurora* (Laxton). Of the same character, but inferior to *Vesta*.
3. *Madame Rose Charmeux*. Plant of good habit ; trusses and flowers small. Inferior.
4. *Ludovic Pereno*. Very similar to *Madame Rose Charmeux*.

Leaves Zonate.

5. *Emily Laxton* *** (Laxton). Plant of tall free-growing habit ; free flowering ; trusses erect, of fair size ; flowers bright scarlet, large and of fine form.
6. *Le Nord Est*. Plant of tall vigorous growth ; free flowering ; trusses very large and full ; flowers pure scarlet, large and of fine form. A splendid variety.
7. *De Lobel*. Plant of fine free vigorous growth ; free flowering ; trusses large, thrown well above the foliage ; flowers bright scarlet, large. A very showy variety.

Gross Habit.

8. *Victor Lemoine* (Lemoine). Plant of compact habit ; leaves large, pale ; free flowering ; trusses medium sized ; flowers bright scarlet, large, and of good form.
9. *Préfet de Lyon*. Plant of strong vigorous growth ; free flowering ; trusses medium sized ; flowers bright glossy scarlet, large, and of fine form.

II. *Flowers Scarlet shaded with Magenta.*

Free Habit.

Leaves Plain Green.

10. *Illuminator* *** (Laxton). Plant of tall vigorous growth ; free flowering ; trusses medium sized ; flowers deep scarlet, shaded with magenta. Of fine form.
11. *Asteroid* (Laxton). Plant of fine habit ; free flowering ; trusses small ; flowers deep scarlet shaded with magenta. An inferior variety.
12. *Richard Laxton* (Laxton). Plant of tall strong growing habit ; shy flowering ; trusses medium sized ; flowers large, scarlet shaded with magenta.

Leaves Zonate.

13. *M. Plaisançon* ***. Plant of somewhat tall habit ; very free flowering ; trusses large and full, deep scarlet shaded with magenta ; flowers large and of fine form. A very effective variety.
14. *Député Saflize*. Plant of fine dwarf habit ; very free flowering ; trusses large ; flowers deep scarlet shaded with magenta. Very large and double.
15. *Jacobæa* (Laxton). Plant of fine habit ; trusses and flowers small. An inferior variety.

III. *Flowers Magenta-Scarlet.*

Free Habit.

Leaves Zonate.

16. *Guillon Mangilli* *** (Lemoine). Plant of fine free compact growth ; very free flowering ; trusses very large, thrown well above the foliage ; flowers semi-double, large, the top petals orange-scarlet. A very showy variety.
17. *Édouard Leguin* (Crousse). Very similar to *Guillon Mangilli*.
18. *C. H. Wagner* (Alegatière). Plant of fine dwarf habit. Very similar to *Guillon Mangilli*.
19. *Miss Goodliff* (Laxton). Plant of tall growing habit ; shy flowering ; trusses medium sized ; flowers small. An inferior variety.
20. *Union Jack* (Laxton). Plant of tall strong growing habit ; free flowering ; trusses large ; flowers medium sized. Similar to *Guillon Mangilli*.
21. *Dr. Hogg* (Laxton). Plant of a fine dwarf compact habit ; leaves small, very much serrated ; free flowering ; trusses large ; flowers large and of fine form, of a nearly uniform magenta colour. A very showy and distinct variety.

Gross Habit.

Leaves Zonate.

22. *Talabot* ***. Plant of strong growing vigorous habit ; leaves large, free flowering ; trusses medium sized, thrown well above the foliage ; flowers deep magenta-scarlet, of fine form. A very pleasing variety.

- | | | |
|--|---|---|
| 23. <i>Æmilio Castelar.</i> | } | These are very tall coarse-growing
sorts, and altogether inferior. |
| 24. <i>Le Progrès.</i> | | |
| 25. <i>Charles Darwin.</i> | | |
| 26. <i>Mons. Froebel.</i> | | |
| 27. <i>Victor de Lyons.</i> | | |
| 28. <i>Exposition de Lyons.</i> | | |
| 29. <i>Mathilde Cumy.</i> Plant of fine dwarf bushy habit ; free flowering ; trusses medium sized ; flowers large and double, of fine form, magenta-scarlet. A distinct variety. | | |

IV. *Flowers Purplish-Scarlet.*

Free Habit.

Leaves Plain.

30. *Député Viox* ***. Plant of dwarf spreading habit ; very free flowering ; trusses large ; flowers semi-double, of good form, deep purplish-scarlet.
31. *M. Buchtet* ***. Plant of dwarf compact habit ; very free flowering ; trusses small ; flowers ll, of fine form, deep purplish-scarlet. A very distinct and novel variety.

V. *Flowers Orange-Scarlet.*

Free Habit.

Leaves Zonate.

32. *Auguste Villaume* *** (Crousse). Plant of fine free compact habit ; small leaves ; very free and constant flowering ; trusses very large ; flowers semi-double, very large and of fine form, bright orange-scarlet. A first-rate variety.
- | | | |
|--|---|---|
| 33. <i>J. C. Roëbard</i> (Alegatière). | } | Very similar to <i>Auguste Villaume</i> . |
| 34. <i>Orion</i> (Laxton). | | |
35. *Prince of Orange* (Laxton). Plant of tall growing habit ; shy flowering ; trusses and flowers small. An inferior variety.
36. *Wonderful* *** (Smith). A semi-double form of *Vesuvius*, possessing all the qualities of that well-known variety.

Gross Habit.

37. *C. Glijm* ***. Plant of strong robust growth ; moderately free flowering ; trusses very large, thrown well up ; flowers very double, bright orange-scarlet. A very effective variety.

38. *Mdlle. Marie Lemoine* (Lemoine). } These are the same as
 39. *L'Année Terrible* (Lemoine). } *C. Glijm*.
 40. *Madame Dauphine* (Laing). Plant of very strong vigorous
 growth; free flowering; trusses large; flowers medium
 sized, of good form, bright-orange scarlet. Distinct and
 good.
 41. *Madame van Houtte*. Plant of tall growing habit; leaves large
 with broad zone; somewhat shy flowering; trusses large;
 flowers large and double, bright orange-scarlet. A late
 flowering variety.
 42. *Princess Teck*.
 43. *Patriote Lorraine*.
 44. *General Faïdherbe*.
 45. *Madame Gustave Henri*.
 46. *Wilhelm Pfitzer*.
 47. *Ville de Nancy*.
 48. *McLeod*.
 49. *Wilhelmine von Verna*.
 50. *Andrew Henderson*.*
 51. *Mons. E. G. Henderson*.*
 52. *Triomphe de Lorraine*.
 53. *Boucharlat Ainé*.
 54. *Triomphe*.
 55. *La Vesuve*.
 56. *Sapeur Pompier*.

These are all very much alike,
and inferior to those described.

VI. *Flowers Cerise*.

Gross Habit.

Leaves Zonate.

57. *Madame Roempler* ***. Plant of very dwarf compact habit;
 free flowering; trusses large and full, well displayed; flowers
 large and of fine form, pure cerise. A very showy
 variety.
 58. *Mr. Gladstone*. Plant of tall growing somewhat loose habit;
 free flowering; trusses very large and full; flowers large and
 of fine form, pure cerise. A fine flower.

* The same.

Leaves Plain Green.

59. *Beuerne* ***. Plant of dwarf bushy habit ; very free flowering ; trusses large and full ; flowers large and of good form, cerise. A good variety.
60. *Th. Guigneau*. Plant of good habit ; free flowering ; trusses large ; flowers of fine form, cerise.
61. *Madame Bondet*.
62. *Meteor*.
63. *Madame Fronchard*.
64. *Merveille de Lorraine*.
65. *Triomphe de Nord*.
66. *Claire Carnot*.

Inferior to those already described.

Free Habit.

67. *Eugène Gladly*. Plant of robust growth ; leaves with distinct zone ; free flowering ; trusses medium sized ; flowers medium sized, pure cerise.

VII. *Flowers Rose-Pink*.

Gross Habit.

Plain Green Leaves.

68. *Madame Michael Buchner* ***. Plant of fine bushy habit ; leaves large, pale green, very free flowering ; trusses large and full, well displayed ; flowers very large, and of good form, bright rose-pink. An improvement as regards habit on *Madame Lemoine*.
69. *Ernest Picard* ***. Plant of fine dwarf compact growth, free flowering ; trusses large, erect ; flowers very large, of a light pink slightly tinged with magenta, the upper petals having a distinct white blotch. A very telling variety.
70. *Madame Lemoine*. Plant of somewhat tall growth ; free flowering ; trusses large and double ; flowers large and of fine form ; bright rose-pink.
71. *Talbot*. } Synonymous. Both of very gross coarse habit.
72. *Caillot*. } Inferior.

- | | | |
|--|---|---|
| 73. <i>Gloire de Nancy</i> . | } | All resembling but inferior
to <i>Madame Buchner</i> . |
| 74. <i>Miss Evelyn</i> (Bell & Thorpe). | | |
| 75. <i>Norma</i> . | | |
| 76. <i>Madame Eugénie</i> .* | | |
| 77. <i>Impératrice Eugénie</i> .* | | |
| 78. <i>Marie Lemoine</i> . | | |
| 79. <i>Comte Henri de Courcy</i> . | | |
| 80. <i>Madame Rudolf Abel</i> . Plant of very gross habit ; shy flowering ;
trusses medium-sized ; flowers medium sized, rose-pink. An
inferior variety. | | |

Leaves Zonate.

81. *Pink Perfection* (Laxton). Plant of gross habit ; leaves distinctly zoned ; shy flowering ; trusses medium sized ; flowers medium sized, dark rose.
82. *Madame Crousse*. Plant of gross, loose habit ; shy flowering ; trusses medium sized ; flowers large and of fine form, dark rose.
83. *Crown Prince* (Turtle). Plant of fine dwarf bushy habit ; leaves very dark green with faint zone ; free flowering ; trusses medium sized ; flowers clear rose-pink, large, with white on top petals. A very showy variety.
84. *Député Varroy*. Plant of fine dwarf habit ; free flowering ; trusses very large, well thrown above the foliage ; flowers large and of good form, dark rose, upper petals blotched with white.
85. *Madame Boutard*. Plant of tall growth ; trusses and flowers medium sized, pale pink. Inferior.
86. *Madame Dauphin*. Plant of vigorous growth ; trusses medium sized ; flowers medium sized, pale pink shaded slightly with magenta.
87. *Jean Alegatière*. Plant of tall branching habit ; shy flowering ; trusses large, very thin ; flowers loose and ragged, pink slightly tinged with lilac.
88. *Clémence Rayer*. Plant of very tall loose habit ; shy flowering ; trusses small ; flowers small, pale pink. An inferior variety.
89. *Rose Pur*. Strong growing, gross habit.
- Louis Blanc*. Very gross habit.

* The same.

Free Habit.

Leaves Zonate.

90. *Sunrise* (Laxton). Plant of fine free bushy habit; shy flowering; trusses small; flowers small, clear rosy-pink, with white on upper petals.
91. *Mr. Barron* (Laxton). A tall-growing variety; leaves small; free flowering; trusses small and full; flowers small, pale rose-pink.
92. *Sylphide*. Plant of fine compact habit; free flowering; trusses medium sized; flowers medium sized, of fine form, pale pink slightly shaded with magenta.

Leaves Plain Green.

93. *Fair Rosamond* (Laxton). Plant of vigorous tall habit; leaves small; shy flowering; trusses very small, on long footstalks; flowers very small, pale pink.
94. *Diego Podda*. Plant of dwarf spreading habit; leaves small with faint zone; free flowering; trusses large, well displayed; flowers large, deep rosy-pink, with long narrow petals. A very distinct variety of the nosegay section.

Gross Habit.

95. *Camelliaeflora*. Plant of dwarf compact habit; leaves large; shy flowering; trusses large on very strong footstalks; flowers very large like a Balsam, rosy-pink. This may be referred to the bouquet section.
96. *Bouquet*. Similar to *Camelliaeflora*. The flowers do not open well. An inferior variety.
97. *Dr. Godron*. Plant of dwarf bushy habit; leaves large, with distinct zone; shy flowering; trusses large; flowers small with reflexed petals. A very inferior variety of the bouquet section.
98. *Mons. de l'Huillier*. Plant of fine dwarf habit; trusses and flower large and very loose. Inferior. One of the bouquet section.

VIII. *Flowers Magenta-Rose.*

Gross Habit.

Leaves Zonate.

99. *Madame Rendatler* *** (Rendatler). Plant of free growing

habit and free flowering; trusses large and fine, well displayed; flowers flat and somewhat open. A fine variety.

100. *Souvenir de Lyons*. Flowers, rose shaded with lilac. An inferior and coarse variety.
101. *François Arlis Dufour*. Plant of very coarse growth; shy flowering; trusses small, erect; flowers small, dark magenta-rose. An inferior variety.

Free Habit.

102. *Madame Thibaut* *** (Lemoine). Plant of fine compact habit; leaves slightly zonate; very free flowering; trusses large and fine, well thrown above the foliage; flowers very large and double, bright magenta-rose, the upper petals distinctly marked with white; very showy. A splendid variety.
103. *Noemie* ***. Plant of fine free habit and very free flowering; trusses large; flowers large, of a lighter shade of rose than *Madame Thibaut*. A continuous flowering variety. First rate.
104. *Anna Montel*. Very similar to *Noemie*.
105. *Eugénie Baudouin* *** (Keteleer). Plant of fine compact habit; leaves dark green with distinct zone; very free flowering; trusses large; flowers large, semi-double, the upper petals distinctly marked with white. A distinct and good variety.
106. *Député Aneelon* (Lemoine). Plant of fine free habit; shy flowering; trusses very large and close, well displayed; flowers large, deep magenta-rose.
107. *Député Berlet* (Lemoine). Fine dwarf compact habit; free flowering; trusses small; flowers small, deep magenta-rose.

IX. *Flowers Pale Pink.*

Gross Habit.

108. *Louis Agassiz* (Sisley). Plant of dwarf compact habit; free flowering; trusses large, well displayed; flowers medium sized, pale rosy-pink. Sometimes almost white.
109. *Député Brice*. Plant of fine compact habit; leaves small, with distinct zone; free flowering; trusses large; flowers large, of fine form, the petals long and narrow, pale pink.
110. *La Réservister*. Plant of vigorous growth; shy flowering;

trusses large ; flowers medium sized, pale pink shaded with lilac.

111. *La Candeur*. Plant of fine dwarf habit ; free flowering ; trusses medium sized ; flowers large, semi-double, pale pink. Frequently almost white.
112. *Lucie Lamoine*. Similar to *La Candeur*.
113. *George Sand*. Plant of tall vigorous growth ; leaves large with distinct zones ; free flowering ; trusses large ; flowers medium sized, very pale pink.
114. *Alice Crousse* }
 115. *Carnea Plena*. } Worthless varieties.

X. *Flowers very Pale Salmon.*

Gross Habit.

116. *Ondine*. Plant of fine compact bushy habit ; leaves dark green, with distinct zone ; moderately free flowering ; trusses medium sized ; flowers medium sized, pale mottled salmon. A very distinct and pretty variety.
117. *Comtesse de Beurges*. Plant of loose straggling habit ; leaves very slightly zoned ; shy flowering ; trusses medium sized ; flowers medium sized, the petals reflexed, pale mottled salmon.
118. *Henri Lecoq*. Very similar to *Comtesse de Beurges*.

XI. *Flowers Pale Salmon.*

Gross Habit.

119. *La Constitution* ***. Plant of fine free, but somewhat straggling, habit ; free flowering ; trusses large, well thrown above the foliage ; flowers medium sized, of fine form, pale salmon. A good variety.

Free Habit.

120. *Louis Buchner* (Sisley). Plant of fine compact growth ; free flowering ; trusses medium sized ; flowers medium sized, of fine form, pale salmon.
121. *Asa Gray* (Sisley). Plant of very dwarf habit ; leaves small, zonate ; very free flowering ; trusses medium sized ; flowers large, semi-double, clear salmon.
122. *Isis* (Courtois). A very compact growing variety ; very free

flowering ; trusses large and well displayed ; flowers medium sized, clear salmon.

123. *Henri Beurir* (Alegatière). Plant of fine dwarf habit ; free flowering ; trusses large, erect ; flowers very double, of good form, clear salmon, the pips being edged with white. A very attractive variety.

XII. *Flowers Salmon.*

Free Habit.

Leaves Zonate.

124. *Louis Boutard* ***. Plant of fine compact habit ; very free flowering ; trusses large, thrown well above the foliage ; flowers large, semi-double, of fine form, rich deep salmon. A capital variety.
125. *Victor Hugo* (Lemoine). Plant of more straggling habit than *Louis Boutard*, but similar in every other respect.
126. *P. Buck*. Plant of very dwarf, close habit and free flowering ; trusses large ; flowers large, semi-double, clear salmon. A showy variety, being a sort of a semi-nosegay.
127. *Émilie Lemoine*. Plant of straggling habit ; free flowering ; trusses very large ; flowers large, petals long and narrow, clear salmon. A semi-nosegay variety.
128. *Sunset* (Laxton). Plant of very tall straggling habit ; free flowering ; trusses medium sized ; flowers medium sized, clear salmon.
129. *Figaro*. Plant of somewhat tall growth ; shy flowering ; trusses and flowers medium sized, clear salmon mottled or streaked with white. Striking.
130. *Comte de Lambertye*. Plant of very dwarf compact habit ; trusses small ; flowers small, clear salmon. An inferior variety.
131. *Carl Vogt*. Plant of tall branching habit ; shy flowering ; trusses large ; flowers small, of good form, deep salmon.

XIII. *Flowers Oculate.*

Gross Habit.

Leaves Zonate.

132. *M. Saison Lorrail* (Crousse). Plant of dwarf habit ; leaves small, with distinct zone ; free flowering ; trusses medium

sized; flowers large, semi-double, pinkish white, rosy eye. A distinct and pretty variety.

133. *François Pertusati* (Sisley). Very similar in every respect to *M. Saison Lorréal*.

134. *Hypathie*. Plant of rather tall habit; shy flowering; trusses medium sized, loose; flowers small, pinkish white, with rosy eye. An inferior variety.

Free Habit.

135. *Richard Larios* (Lemoine). Plant of free good habit, with distinct bronzy-zone; free flowering; trusses medium sized; flowers small, pinkish white, with rosy eye. A somewhat inferior variety.

XIV. *Flowers White.*

Free Habit.

Leaves Zonate.

136. *Madame Emilio Baltet* *** (Lemoine). Plant of fine free habit; foliage pale green with faint zone; free flowering; trusses medium sized, full; flowers medium sized, nearly pure white, and pretty double. The best white.
137. *Mrs. Trevor Clarke* *** (Laxton). Plant of tall growing, straggling habit; foliage very pale green with zone; free flowering; trusses medium sized; flowers small, of good form, pure white when opening, but changing to a pink tinge with age.
138. *Venus* *** (Lemoine). Plant of vigorous habit; leaves dark green with broad zone; free flowering; trusses medium sized; flowers small, of good form, pure white when opening but tinged with pink when fully expanded.
139. *The Ghost* (Laxton). Plant of free tall growing habit, and free flowering; trusses medium sized; flowers small, pearly white, changing to a pinkish colour with age.
140. *Adelaide Planchon*.
141. *Aline Sisley* (Sisley).
142. *Wilfrid* (Laxton).
143. *Fille d'Honneur*.
144. *Boule de Neige*.
145. *Madame Aumury de Cazanove*.

} These are inferior to those described.

XV. *Pompon-Flowered Section.*

Flowers Scarlet.

146. *Jewel* *** (Laxton). Plant of dwarf compact habit, like the old *Tom Thumb*; leaves plain green; free flowering; trusses small and neat; flowers small, very double, resembling the bloom of a double Hawthorn, pure scarlet. A distinct and pretty variety, and very useful for bouquets.
147. *Meteor Flag* *** (Turner). Plant of strong vigorous habit and very free flowering; trusses large; flowers very double and of fine form, pale scarlet. A splendid variety for bouquets.
148. *Speculum* (Laxton). Very similar to *Jewel*, but a stronger grower.
149. *E. J. Lowe* (Laxton). Plant of tall straggling habit; free flowering; trusses small; flowers small, scarlet, do not open well. Inferior.
150. *Vulcan*. Very similar to *E. J. Lowe*.
151. *Reynolds Hole* (Laxton). Plant of free-growing, rather loose habit; free flowering; trusses small; flowers small, not opening well, pale scarlet. An inferior variety.
152. *Aglaia* (Laxton). A very shy-flowering and inferior variety.

Flowers Purplish-Scarlet.

153. *Le Nègre* ***. Plant of free vigorous habit; leaves plain green; free flowering; trusses medium sized, well displayed; flowers large, of fine form, very double, of a very pretty shade of purplish-scarlet. A good variety, but sometimes it does not open its flowers well.
154. *Pluto* (Laxton). Plant of fine dwarf habit; free flowering; trusses small and loose; flowers small, purplish-scarlet. An inferior variety.
155. *Cinderella* (Laxton). Of stronger growth than *Pluto*, but resembling it in other respects.
156. *Théophile Gauthier*. Plant of good habit; trusses large and coarse; flowers large with reflexed petals; does not open well. A very inferior variety.

Flowers Cerise.

157. *Guiding Star* (Laxton).
158. *Tom Tit* (Laxton).
159. *Sophia Clapton* (Laxton).

These three are of very dwarf compact growth; the trusses

small; the flowers small, opening badly, the petals reflexed, thus showing the underside. Worthless.

XVI. *Variegated Section.*

160. *Mrs. Carr.* Plant of very poor growth; the leaves broad with a creamy-white margin; flowers half-double, pale pink. Of no merit.

The varieties selected as the best and most desirable in their respective groups are indicated in the following list.

The numbers opposite to each refer to the number in the Report.

Flowers Scarlet.

1. Vesta.	6. Le Nord Est.
146. Jewel.	7. De Lobel.
147. Meteor Flag.	8. Victor Lemoine.
5. Emily Laxton.	

Flowers Scarlet shaded with Magenta.

10. Illuminator.	14. Député Saflize.
13. Plaisançon.	

Flowers Magenta-Scarlet.

16. Guillon Mangilli.	21. Dr. Hogg.
22. Talabot.	29. Mathilde Cumy.

Flowers Orange-Scarlet.

32. Auguste Villaume.	40. Madame Dauphin.
37. C. Glijm.	36. Wonderful.

Flowers Purplish-Scarlet.

30. Député Viox.	153. Le Negre.
31. M. Buchtet.	154. Pluto.

Flowers Cerise.

67. Eugène Glady.	59. Beuerne.
57. Madame Roempler.	

Flowers Rose-Pink.

68. Madame Michael Buchner.	83. Crown Prince.
69. Ernest Picard.	84. Député Varroy.

Flowers Magenta-Rose.

99. Madame Rendatler.	103. Noemie.
102. Madame Thibaut.	105. Eugénie Baudouin.

Flowers Pale Salmon.

119. La Constitution.	121. Asa Gray.
120. Louis Buchner.	

Flowers Salmon.

124. Louis Boutard.		126. P. Buck.
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Flowers Oculate.

132. M. Saisson Lorrial.	
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Flowers White.

136. Madame Æmilio Baltet.		138. Venus.
137. Mrs. Trevor Clarke.		

XLVI. Report on Dwarf Kidney Beans Grown for Trial by the
Fruit and Vegetable Committee of the Royal Horticultural
Society at Chiswick, 1876.

For several preceding seasons an endeavour has been made to secure a complete trial of the entire collection of the Dwarf-growing Kidney Beans, so as to be able to make a selection of the really good and distinct varieties which might exist amongst the very numerous and confusing mass of names that appear in seed lists.

Nearly every named sort that appeared in English seed lists was secured, and a portion of those most recommended on the Continent.

In all 190 differently named sorts were tested, but it was considered unnecessary to go to the expense of testing all the foreign varieties, as the Butter or Flesh Beans of Southern Germany, and the Haricots of France, which are grown for the ripe seeds, and are mostly unsuited for the climate of this country.

It may be noted also that very many of the Continental varieties of Dwarf Kidney Beans have a great tendency to become runners, and even seeds of the most approved varieties saved abroad have same tendency, and are not nearly so productive.

A portion only of those that were grown, but embracing all the distinct varieties which were considered worthy of cultivation, are described, the remainder being proved unsuitable and inferior.

They were sown on June 1st on a well-prepared border, under the same conditions. The great heat and dryness of the season somewhat interfered with the growth of the earlier varieties, but in general the trial was satisfactory.

The seed for the purposes of this trial was contributed by W. & J. Brown, Stamford; Barr & Sugden, 12, King Street, Covent Garden; G. Cooling, Bath; Carter & Co., 237 and 238, High Holborn, W.C.; R. Dean, Ealing; J. Dell, Stoke Rocheford, Grantham; J. Dancer, Little Sutton, Turnham Green; G. Gibbs & Co., Down Street, Piccadilly; Harrison & Sons, Leicester; Hooper & Co., Covent Garden; Howeroft & Watkins, Covent Garden; Minier, Nash, & Nash, 60, Strand, W.C.; Nutting & Sons, 60, Barbican, E.C.; W. Rumsey, Joyning's Nursery, Waltham Cross; D. Radcliffe & Co., 129, High Holborn, W.C.; J. Veitch & Sons, Chelsea; Vilmorin, Andrieux, et Cie., Paris; Wheeler & Son, Gloucester; W. Wood & Son, Woodlands Nursery, Maresfield.

The varieties marked thus *** have received First-class Certificates.

I. SEEDS WHITE.

1. *White Canterbury*.

Synonyms.—White Haricot; Early White Canterbury; Canterbury White Advancer (of some).

Plant of moderately vigorous habit, bushy, growing about 2 feet high. Pods of medium length, somewhat narrow, but of fine even form. A moderate cropper. First early; seeds long, white.

2. *Early White Etampes Canterbury*.

Plant of very dwarf habit, scarcely exceeding 12 inches in height. Leaves broad, dark green. Pods of medium size, and all fit for use at the same time. Very early, and useful as an early variety, but a poor cropper. Seeds long, thin white.

3. *White Advancer*.

Synonyms.—Carter's White Advancer; White Flageolet; Haricot nain blanc unique; Haricot nain gigantesque. Long pod, half dwarf; Haricot a pied blanc gros.

Plant of much the same character as White Canterbury, but of a more robust, vigorous growth. Pods long, broad; of a fine regular size. A great cropper. First early; seeds long, white. A very fine variety.

4. *Haricot Nain Blanc Quarantain* ***.

Plant of strong vigorous growth, attaining a height of about

18 inches. Pods of medium length, rather broad, thick, and fleshy, and of fine, regular size. A heavy cropper. Comes early into use, and bears successionally as a mid season variety. Seeds short, thick, white. An excellent sort.

5. *Dwarf White Round Paris.*

Synonyms.—White Canterbury (of some); White China; Haricot Princesse nain; White 1000 for 1; Haricot nain blanc rond; Haricot nain de Hongrie; Haricot Comtesse de Chambord; Haricot Predomme nain; Sophie.

Plant of vigorous growth, somewhat inclined to run. Leaves small. Pods short, narrow, soon becoming leathery and unfit for use, with the seeds showing their form through. A fair cropper, but worthless. Second early. Seeds short, round, white.

6. *Dwarf White Dutch Scimitar.*

Synonym.—Emperor William.

Plant of medium growth. Foliage pale green. Pods long and narrow, the seeds soon attaining full size, and showing their markings through. A medium cropper. Seconds early. Seeds long, broad, white. A worthless variety.

II. SEEDS WHITE-SPOTTED BLACK.

7. *Victoria.*

Synonyms.—Victoria long-podded; Clapham Prolific; Kemsley's New Dwarf; Dunnett's Hybrid; Exhibition Dwarf; Flageolet; Chiswick Forcing; White Long Black Blotch; Wilson's Wonder; Pooley's Prolific.

Plant of very robust, vigorous growth, about 18 inches high. Foliage large, lightish green. Pods long and handsome. A good cropper. Comes early into use, but the plant continues to grow and bears in succession for a long time. Seeds long and narrow, with distinct black spots near the eye. A good useful variety for general cultivation.

III. SEEDS WHITE SPOTTED OR SPECKLED RED.

8. *Robin's Egg.*

Synonyms.—China; China Red; Dwarf Marbled China; Red Blotched Sugar or Bacon.

Plant of dwarf bushy habit, seldom exceeding 15 inches in height. Pods short and narrow, soon becoming unfit for use with the seeds showing their form through. A fair cropper, but an inferior variety. First early. Seeds long, thick, white, much speckled with dull red round the eye.

9. *Pheasant's Eye.*

Synonyms.—Nonpareil; Ne Plus Ultra, from the Caffre Land; Long-podded China; Chinese Long-pod; Stratford Prolific; Black-eyed China.

Plant of strong vigorous growth, from 12 to 18 inches in height. Leaves large and broad. Pods from 6 to 9 inches long, broad, thick, and fleshy. A good bearer, continuing to give a good succession till well on in the season. A late variety. Seeds long, white, much spotted, and in some instances almost covered with red.

IV. SEEDS WHITE-BLOTCHED YELLOW.

10. *Haricot bicolore d'Italie.*

Plant of strong vigorous habit, somewhat inclined to run; foliage pale green. Pods long and handsome, and very broad. A good cropper. Second early. Seeds large, roundish, white, with distinct yellow blotch round the eye. A very good variety.

V. SEEDS STRAW COLOUR.

11. *Canary.*

Synonyms.—Haricot des Canaries; Yellow Parisian; Dwarf Yellow Round Paris; Six Weeks Early Cream; Haricot Jaune de la Chine.

Plant of medium growth, from 12 to 15 inches high. Pods short, thick, and narrow, and soon getting unfit for use, with the seeds showing their form through. A second early. Seeds very small, round, of a pale straw colour. A very inferior and worthless variety.

VI. SEEDS DUN OR DARK YELLOW.

12. *Minier's First Early* ***.

Synonym.—Mexican Salmon; Salmon du Mexique; Dwarf Mexican Salmon.

Plant of very strong vigorous growth, attaining a height of from 12 to 18 inches. Leaves large and broad, lightish green. Pods long, thick, and fleshy, and of fine regular form. A prolific variety, and very early. Seeds short and thick, of a dark yellow hue.

13. *Rachel* ***.

Synonyms.—Cooling's Early Bath Forcing; Six Weeks.

Plant of fine dwarf habit, not over 12 inches in height. Foliage very light green. Pods long and handsome, and of fine even form. A good bearer, and very useful for early work. Seeds long and thin, of a dun colour.

14. *Yellow Canterbury*.

Synonyms.—Six Weeks Early Yellow.

Plant of robust growth, from 15 to 18 inches high. Leaves large and pointed, lightish green. Pods short, thick, and narrow. A very poor cropper. Second early. Seeds short and thick, roundish, dark yellow. A worthless variety.

15. *Newington Wonder*.

Synonym.—Royal Dwarf.

Plant of vigorous growth, partaking a little of the runner. Leaves small, pointed, dark green. Pods of medium length, broad and fleshy, of fine regular form. A heavy cropper, and gives a good succession. Second early. Seeds short and thin, of a light dun colour. A good useful sort.

16. *Haricot Suisse Jaune*.

Plant of medium growth. Leaves large, dark green. Pods short, thick, soon getting unfit for use. A heavy cropper. A late variety. Seeds long and thin, of a light dun or saffron colour. Worthless.

17. *Yellow Champion*.

Plant of remarkably strong vigorous growth, attaining a height of from 18 to 24 inches. Leaves very large and broad, light green. Pods long and handsome, of thick and fleshy substance. A good cropper, and continues to yield a good succession far through the season. Second early. Seeds long and narrow, of a dark yellow colour. A good variety for general crop.

18. *Sir Joseph Paxton.*

Plant of very dwarf habit, never exceeding 12 inches in height. The plant ripens off very early. Pods of medium size, thick and fleshy, and of fine even form. A good bearer, and very early. Seeds short, thin, and very narrow, of a dark yellow colour.

19. *Pale Dun or Cream.*

Synonyms.—Cream Colour; Dun; Light Dun; Dark Dun or Liver; Australian; Dwarf 100 for 1; Haricot Jaune Cent pour Un.

Plant of vigorous habit 18 to 34 inches high. Leaves very large dark green. Pods from 6 to 8 inches long, of a thick fleshy substance, and of regular form. A heavy cropper. Second early. Seeds long and thin, of a pale dun or saffron colour.

VII. SEEDS DARK DUN OR LIVER.

20. *Dark Dun.*

Synonyms.—Liver; Haricot Chocolat.

Plant of robust growth, attaining a height of from 18 to 24 inches. Pods long and handsome, of thick fleshy substance. A heavy bearer, and continues to give a good succession until the season is far advanced. A second early. Seeds short and thick, of a dark chocolate colour. A good variety.

VIII. SEEDS DUN-SPECKLED BROWN OR REDDISH.

21. *Best of All.*

Plant of remarkably dwarf habit, from 9 to 12 inches high. Leaves broad. Pods very large, thick and fleshy, and of a very regular form. A good cropper, and keeps on bearing until well on in the summer. A second early. Seeds short and thin, of a yellowish hue, spotted over with faint specks of dull red.

22. *Fulmer's Forcing.*

Synonyms.—Dwarf Long Red-speckled; Earliest Flemsburgh; Red-speckled; Haricot Algeriens; Haricot Turc; Carter's Essex Favourite; Haricot Suisse Sang de Bœuf; Colchester Red.

Plant of fine robust, vigorous growth. Leaves large, very dark green, and somewhat pointed. Pods long and of fine regular form, thick and fleshy. A good cropper, and yielding a good succession. First early. Seeds long and thin, dun-speckled with light red. A very useful variety for forcing for early use.

23. *Osborn's Forcing.*

Synonyms.—Mohawk ; Earliest Blackish Red-marbled Eagle Flemsburgh ; Haricot Bagnolet ; Dwarf Dark Brown-speckled.

A dwarf variety, seldom growing more than 12 inches in height. Leaves medium sized, dark green. Pods long and fleshy. A very free bearer, and continues bearing late. First early. Seeds dark dun covered with light red specks. This is a very useful variety for early summer use, or for growing in pots.

24. *Sion House.*

Plant of strong vigorous growth, somewhat inclined to run. Leaves of medium size, dark green, and very much pointed. Pods long and handsome covered with a profusion of little dull red spots, which is objectionable to many, and which as they ripen change to a very bright red. Second early. Seeds long and thin, light dun-speckled over with miniature red spots.

25. *McMillan's Prolific.*

Synonyms.—William's Early Prolific ; Dell's Kidney.

Plant of very dwarf habit, growing to the height of from 9 to 12 inches. Pods rather short, thick, and fleshy, profusely spotted with dull brown. A very free-bearing variety, continuing to bear late in the season. Second early. Seeds long and broad, light dun, dotted over with faint dull brown specks, but of a very mixed character.

IX. SEEDS RED OR REDDISH-BROWN.

26. *Canadian Wonder.*

Synonyms.—Flageolet Scarlet (of some) ; Haricot Flageolet Rouge ; Har cot Rognon de coq.

Plant of very vigorous growth. Habit rather spreading, from 24 to 30 inches high ; occasionally inclined to run a little. Leaves very large and broad, of a dark green colour. Pods very long, broad, and handsome, of a very thick and fleshy substance. A very free-bearing variety. Second early, but continuing to produce a good supply late in the season. Seeds very large, long, and narrow, of a reddish-brown colour.

27. *Cutbush's Giant.*

Synonyms.—Scarlet Flageolet ; Bam's No. 1 ; Crimson Flageolet ;

Canadian Wonder (of some); American Prolific; Dwarf Blood-red Flageolet; Flageolet Blood-red; Superfluity.

Plant of vigorous growth, bearing a great resemblance to Canadian Wonder, but of a far more erect habit of growth. Seeds very large, long, and flat, of a reddish-brown colour. A splendid mid-season variety.

X. SEEDS BLACK.

28. *Negro*.

Synonyms.—Haricot Noir Hâtif de Belgique; Small Negro; Negro Dwarf.

Plant of very fine dwarf habit, seldom exceeding 12 inches in height. Leaves of medium size, dark green. Pods of medium size, thick and fleshy, and rather narrow. A good bearer, continuing to yield profusely till late in the season. First early. Seeds small, bright shining black. A good variety for general sowing.

29. *Black Canterbury*.

Synonyms.—Negro (of some); Haricot Nain des Antilles; Long-podded English Negro (of some).

Plant of medium robust habit. Leaves broad, of a dark green colour. Pods rather short and narrow. A medium cropper. First early. Seeds similar to the Negro, but of a dull, sooty black.

30. *New Violet from Aix*.

Plant of medium growth, rarely exceeding 12 inches in height. Leaves broad and pointed, lightish green. Pods short and narrow, soon getting unfit for use, with the seeds showing their form through. Second early. Seeds very small, round, black. A worthless variety.

31. *Negro Long-podded*.

Synonyms.—Haricot Flageolet Noir.

A very strong-growing variety. Leaves very large, pointed. Pods long, thick, fleshy, of fine even form. A good bearer, continuing to yield a good supply until late in the season. Second early. Seeds short and very narrow, shining black. This is a very useful and good variety.

XI. SEEDS BLACK-SPECKLED.

32. *Zebra*.

Synonym.—Black-speckled (of some).

Plant of very strong vigorous growth, from 12 to 18 inches high. Leaves large, lightish green. Pods long, thick, fleshy, and of fine regular form, speckled over with dark russety spots. A heavy cropper, and yields a good successional supply. A late variety. Seeds long and thin, black, speckled over with dull red spots, but varying in character.

33. *Black-speckled*.

Synonyms.—Purple-speckled; Red-speckled; Haricot Indien.

Plant of strong vigorous growth, occasionally inclined to run a little. Pods long and of regular form, of a thick fleshy substance, speckled as in the case of the Zebra, but not so distinct. A heavy bearer, continuing to keep up a good succession. Seeds long, black, distinctly mottled with saffron-coloured spots.

XII. BUTTER BEANS.

1. White-podded.

34. *Dwarf White Algerian Wax*.

Seeds white.

35. *Haricot Beurre blanc nain*.

Seeds white.

36. *White Wax Dwarf*.

Seeds white.

37. *Earliest Gray White-podded*.

Seeds dun or dark yellow.

38. *Haricot Beurre à cosse blanche*.

Seeds dun, speckled brown or reddish.

39. *Dwarf Black May*.

Seeds black.

40. *Dwarf Black-seeded Algerian Wax*.

Seeds black.

The pods of all these are white, and are very similar as regards

growth, &c., although they vary so much in the colour of the seeds.

Plants of medium growth, seldom exceeding 12 inches in height. Pods short and thick, of a white colour, which is not generally approved of in this country.

2. Yellow-podded.

41. *Red Marbled Yellow-podded Wax.*

Seeds white, spotted or speckled red.

42. *New Black Marbled Yellow-podded Wax.*

Seeds white, spotted or speckled white.

These two are synonymous, and are similar in habit, growth, &c., to the White-podded, differing only from them in having the pods yellow.

List of selected varieties arranged according to the respective season of coming into use :—

First Early.

Early White Etampes Canterbury.	Osborn's Forcing.
White Advancer.	Fulmer's Forcing.
Rachel.	Haricot nain blanc quarantain.
Minier's First Early.	Sir Joseph Paxton.

Mid Season.

Negro.	Best of All.
Black Canterbury.	Newington Wonder.
Sion House.	Yellow Champion.

Late.

Canadian Wonder.	Victoria.
Cutbush's Giant.	Pheasant's Eye.
Negro Long-podded.	Zebra.

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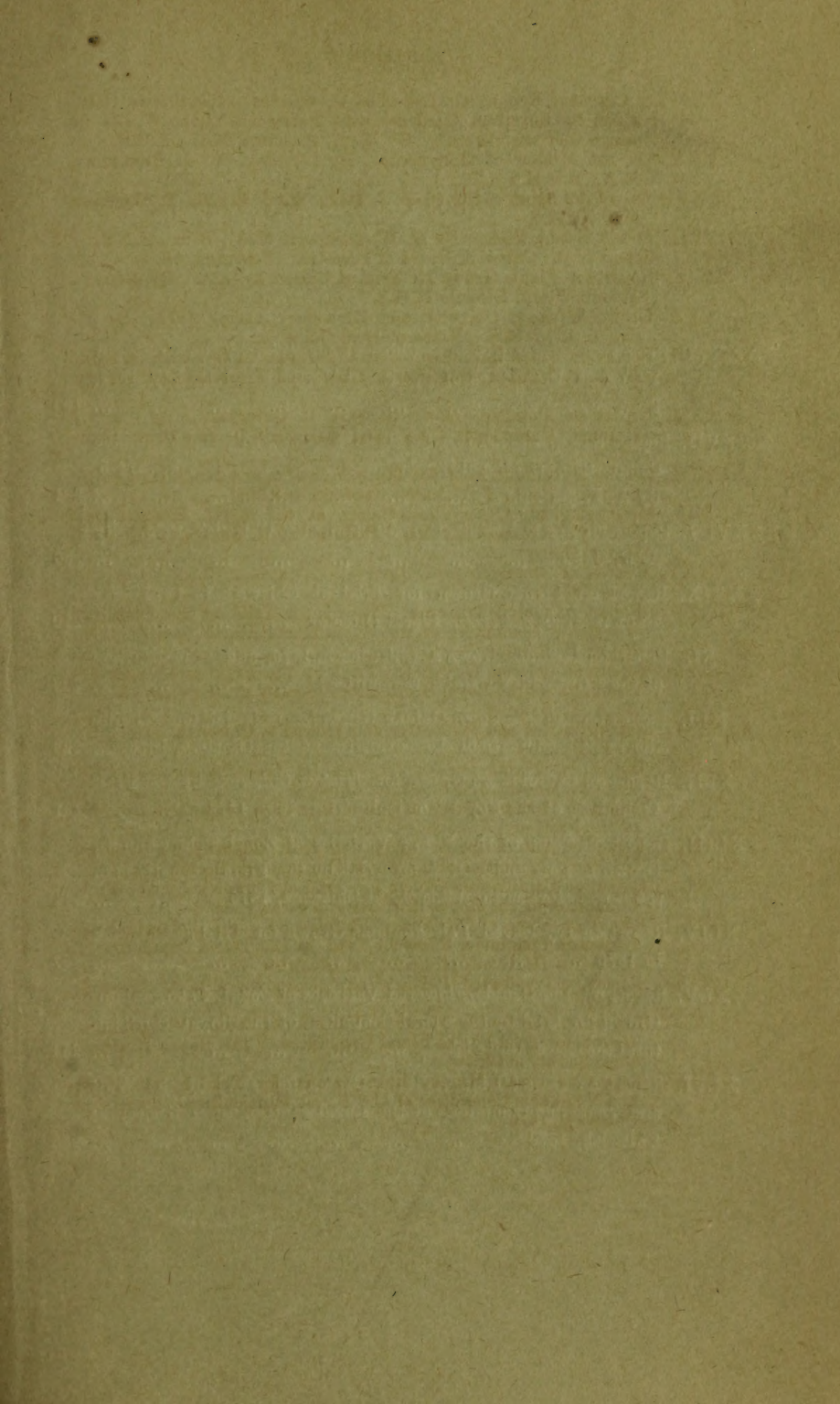


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